DOCUMENT RESUME

ED 306 226 TM 012 939

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TITLE Invariance on Multivariate Results: A Monte Carlo Study of Canonical Coefficients.
PUB DATE 5 Mar 89
NOTE 104p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, March 27-31, 1989).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142) -- Statistical Data (110)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Computer Simulation; *Correlation; *Monte Carlo Methods; *Multivariate Analysis; *Sampling; Statistical Analysis; Statistical Studies
IDENTIFIERS *Canonical Coefficients; *Sampling Error

ABSTRACT

In the present study Monte Carlo methods were employed to evaluate the degree to which canonical function and structure coefficients may be differentially sensitive to sampling error. Sampling error influences were investigated across variations in variable and sample (n) sizes, and across variations in average within-set correlation sizes and in across-set population correlation sizes. Sixty-four different research situations were investigated, and for each situation 1,000 random samples were drawn. Results suggest that both sets of coefficients are roughly equally influenced by sampling error, except perhaps when some intradomain correlation coefficients are quite large. Thus, the case for emphasizing interpretation of structure coefficients must be made on a psychometric basis, rather than on the grounds that structure coefficients are less sensitive to sampling error influences. (Eight data tables supplement the text. A scattergram of canonical composite scores, population parameters for 16 research situations, 64 tables of descriptive statistics each involving 1,000 samples, and two tables of mean deviations and mean absolute deviations from population values are appended.) (Author)

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INVARIANCE OF MULTIVARIATE RESULTS:

A MONTE CARLO STUDY OF CANONICAL COEFFICIENTS

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Paper presented at the annual meeting of the American Educational Research Association (session #13.20), San Francisco, March 28, 1989. The author gratefully acknowledges the university's allocation of extraordinary computer resources and the LSU system's generous sabbatical policy, both of which made this Monte Carlo computer simulation study possible.

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ABSTRACT

In the present study Monte Carlo methods were employed to evaluate the degree to which canonical function and structure coefficients may be differentially sensitive to sampling error. Sampling error influences were investigated across variations in variable and sample (n) sizes, and across variations in average within-set correlation sizes and in across-set population correlation sizes. Sixty-four different research situations were investigated, and for each situation 1,000 random samples were drawn. Results suggest that both sets of coefficients are roughly equally influenced by sampling error, except perhaps when some intradomain correlation coefficients are quite large. Thus, the case for emphasizing interpretation of structure coefficients must made on a psychometric basis, rather than on the grounds that structure coefficients are less sensitive to sampling error influences.

As Hinkle, Wiersma and Jurs (1979) have noted, "it is becoming increasingly important for behavioral scientists to understand multivariate procedures even if they do not use them in their own research." And recent empirical studies of research practice do confirm that multivariate methods are employed with some regularity in behavioral research (Elmore & Woehlke, 1988; Gaither & Glorfeld, 1985; Goodwin & Goodwin, 1985).

There are two reasons why multivariate methods are so important in behavioral research, as noted by Thompson (1986c) and by Fish (1988). First, multivariate methods control the inflation of Type I "experimentwise" error rates. Paradoxically, although the use of several univariate tests in a single study can lead to too many hypotheses being spuriously rejected, as reflected in inflation of "experimentwise" error rate, it is also possible that the failure to employ multivariate methods can lead to a failure to identify statistically significant results which actually exist. Fish (1988) provides a data set illustrating this equally disturbing possibility, a possibility suggesting that multivariate methods are also often vital in behavioral research because multivariate methods best honor the reality to which the researcher is purportedly trying to generalize. Since significance testing and error rates may not be the most important aspect of research practice (Thompson, 1988b), this second reason for employing multivariate statistics is actually the more important of the two grounds for using these methods.

Thompson (1986c, p. 9) notes that the reality about which most researchers wish to generalize is usually one "in which the researcher cares about multiple outcomes, in which most outcomes

have multiple causes, and in which most causes have multiple effects." As Hopkins (1980, p. 374) has emphasized:

> These multivariate methods allow understanding of relationships among several variables not possible with univariate analysis... Factor analysis, canonical correlation, and discriminant analysis--and modifications of each procedure--allow researchers to study complex data, particularly situations with many interrelated variables. Such is the case with questions based in the education of human beings.

Similarly, McMillan and Schumacher (1984) argue that:

> Social scientists have realized for many years that human behavior can be understood only by examining many variables at the same time, not by dealing with one variable in one study, another variable in a second study, and so forth... These [univariate] procedures haved failed to reflect our current emphasis on the multiplicity of factors in human behavior... In the reality of complex social situations the researcher needs to examine many variables simultaneously. (pp. 269-270)

One of the most useful multivariate methods is canonical correlation analysis, a statistical procedure first conceptualized by Hotelling (1935). Kerlinger (1973, p. 652) has suggested that "some research problems almost demand canonical [correlation] analysis." Similarly, Cooley and Lohnes (1971, p.

176) suggest that "it is the simplest model that can begin to do justice to this difficult problem of scientific generalization." Canonical methods subsume all univariate and parametric methods as special cases (Knapp, 1978). Thompson (1988a) presents a small heuristic data set and illustrates how univariate and multivariate methods can be conducted with canonical correlation analysis, a general data analytic system.

However, for a variety of reasons (Thompson, 1984, pp. 8-9), some researchers hesitate to employ canonical methods. One reason involves the difficulty of interpreting canonical results. As Thompson (1980, pp. 16-17) notes, "The neophyte student of canonical correlation analysis may be overwhelmed by the myriad coefficients which the procedure produces." Two sets of coefficients have been primary rivals as candidates for emphasis when making interpretations: (a) function coefficients, which are the mathematical equivalents of the beta weights produced in the more familiar regression analysis; and (b) structure coefficients, which represent the bivariate correlation coefficients between each variable and the synthetic or composite variables that are actually interrelated in a canonical analysis. Canonical structure coefficients are equivalent to the structure coefficients generated in regression analysis (Thompson & Borrello, 1985). Disagreement regarding the interpretation utility of these canonical coefficients even resulted in a formal debate (Harris vs. Bolton) on these issues at a recent meeting of the Society for Multivariate Experimental Psychology--Southwest Division (cf. Harris, 1987).

Some researchers have emphatically argued that structure

coefficients must be given primary consideration when formulating interpretations. For example, Meredith (1964, p. 55) argued that the chance of formulating correct interpretations absent examination of structure coefficients "is practically nil." Kerlinger and Pedhazur (1973, p. 344) characterize function coefficients as "the weak link in the canonical correlation analysis chain." Levine (1977, p. 20) is equally emphatic in arguing that structure coefficients are critical to making correct interpretations. An important argument on which this position is based involves the psychometric position that structure coefficients should be emphasized, because these coefficients tell the researcher the correlation between a given observed variable and the latent synthetic variables that are really being correlated in a canonical analysis.

But some researchers have based their positions on the view that structure coefficients should theoretically be more invariant from sample to sample than function coefficients (e.g., Darlington, Weinberg & Walberg, 1973). Cooley and Lohnes (1971, p. 55) take the same position in the related regression case, and do so on the same grounds. However, Monte Carlo studies (Barcikowski & Stevens, 1975; Thorndike & Weiss, 1973) have not yet conclusively resolved these issues. The present study was conducted to investigate the relative invariance of the two sets of coefficients across variations in variable and sample (n) sizes, and across variations in average within-set correlation sizes and in across-set population correlation sizes.

The Basic Logic of Canonical Analysis

Although canonical analysis is explained in several recent texts (Marascuilo & Levin, 1983; Thompson, 1984), some readers may appreciate a brief discussion of the logic of canonical analysis, prior to the presentation of the results of computer simulations reported here. Table 1 presents the simplest case of a true multivariate correlation analysis, since there are two variables in both the predictor ("A" and "B") and the criterion ("X" and "Y") variable sets. The table also presents the Z-score equivalents of the raw scores of the 12 hypothetical subjects on all four variables. The full canonical results associated with the Table 1 data are presented in Table 2.

INSERT TABLES 1 AND 2 ABOUT HERE.

The function coefficients presented in Table 2 are equivalent to multiple regression beta weights, factor analysis pattern coefficients ("loadings"), and discriminant analysis function coefficients. Like all these weights, function coefficients are the best possible weights for a given data set for a given purpose. In the case of canonical function coefficients, no other weights can be derived for a given data set to yield a larger correlation between variable sets. Thompson and Borrello (1985) provide more detail on the equivalence of coefficients across methods, an equivalence that is to some degree masked by the unfortunate but traditional use of different names to refer to statistical entities that are in fact the same across analytic methods.

The function coefficient weights in Table 2 can be applied

to the "observed" Z-scores reported in Table 1 to create "latent" or "synthetic" variables scores for each of the 12 subjects on each of the two canonical functions reported in Table 2. For example, the function coefficients for criterion variables "X" and "Y" on Function I were, respectively, 0.511 and 0.867. The first subject's Z-scores for "ZX" and "ZY" were -1.525 and 1.248, respectively. Thus, the application of these weights to these observed Z-scores ((0.511 x -1.525) + (0.867 x 1.248)) yields a "latent" canonical composite score ("C1") of 0.303 for this subject, as reported in Table 1. Scores for the canonical composite for the predictor variable set ("P1") are computed in an analogous manner.

The Pearson product-moment correlation between latent criterion and predictor variables "C1" and "P1" is the canonical correlation coefficient (Rc) associated with the first canonical function reported in Table 2. Similarly, the bivariate correlation between "C2" and "P2" is Rc for the second canonical function.

Correlating observed with latent variables yields coefficients that can be very useful in interpreting canonical results. For example, correlating "X" (or "ZX") with the canonical composite scores associated with the variable's own variable set ("C1") yields what is called a structure coefficient for the variable "X" on canonical Function I. Structure coefficients inform the researcher regarding the nature of the latent canonical variable (e.g., "C1"), and are often vital in interpreting canonical results (Thompson, 1987).

Similarly, correlating the observed variable "X" (or "ZX") with the latent variable for the other variable set on Function I ("P1") helps inform the researcher about the meaning of the latent variable associated with scores for the canonical composite for the predictor variables on Function I. Correlation coefficients between observed and latent variables computed across variable sets are called index coefficients (Thompson, 1984, pp. 30-31), and are also very important in interpretation (Timm & Carlson, 1976, p. 161). Table 3 indicates which canonical coefficients are computed by correlating various combinations of observed and latent variables.

INSERT TABLE 3 ABOUT HERE.

Method

Monte Carlo or computer simulation methods have been used for various purposes, including confirming that Yates' correction for contingency table chi-square results is inappropriate (Thompson, 1988b), creating a test statistic for evaluating the statistical significance of correlations of factors across different data sets (Thompson, 1986b), and establishing the magnitudes of distortions introduced when ANOVA is inappropriately used (Thompson, 1986a). One type of Monte Carlo study begins with the creation of a large population of data with known characteristics predetermined by the researcher. Then samples of data are randomly selected and sample results are calculated over and over again, usually 1,000 times for each unique population of data. These results are averaged to

determine the degree to which sampling error causes bias in estimates of population parameters.

In the present study it was necessary to create populations of data that were multivariate normally distributed, since statistical significance testing of Rc requires this assumption (Thompson, 1984, pp. 16-18). Many researchers are interested in significance tests (Thompson, 1988c), try to meet the multivariate normality assumption in their research, and so this assumption was met here in creating the Monte Carlo populations in order to generalize to contemporary research practice.

The present study was conducted to investigate the impacts of sampling error across variations in variable and sample (n) sizes, and across variations in average within-set correlation sizes and in across-set population correlation sizes. The computer program developed by Morris (1975) was employed to generate populations of N=6,000-by-v with desired parameters. The specific variations explored in the Monte Carlo study were: (a) use of variable sets consisting of 6+6(v=12), 4+4(v=8), 4+2(v=6), or 10+2(v=12) variables; (b) sample sizes (n) consisting of 3, 10, 25, or 40 persons per variable; and (c) populations in which all correlations were zero, populations in which within-set correlations were all zero but in which between-set correlations were heterogeneous, populations in which within-set correlations were heterogeneous but in which between-set correlations were all zero, and populations in which all bivariate correlation coefficients were non-zero and homogeneous.

One population was created for each of the four types of

correlation matrices. Different subsets of variables were employed to represent variations in variable set sizes. For example, for a given population of data, variable set "A" consisted of variables "1" through "6" being correlated with variables "7" through "12". Variable set "B" consisted of variables "1" through "4" being correlated with variables "9" through "12". Tables 4 and 5 present the population correlation coefficients for each of the four types of correlation matrices based on data for N=6,000 subjects, and the footnotes to the tables further explain which subsets of variables were used to study the effects of the four variations in variable set sizes.

INSERT TABLES 4 AND 5 ABOUT HERE.

Monte Carlo Results

For each of the 64 sets of population data (64 = 4 variable set sizes by 4 sample sizes (n) per variable by 4 correlation matrix types), 1000 random samples without replacement were drawn, and canonical function and structure coefficients were computed. Table 6 presents illustrative selected results (a) for the population correlation matrix in which all bivariate correlation coefficients for the N=6,000 subjects were all zero to at least two decimal places; (b) for which both variable sets consisted of six variables (v = 6+6 = 12); (c) and for which the 1,000 samples each involved three subjects per variable (n = 3x12 = 36).

INSERT TABLE 6 ABOUT HERE.

In Table 6, descriptive statistics for each coefficient

across 1,000 samples are presented to two decimal places. Means are presented above slash marks, while corresponding standard deviations about these means are presented below the slash marks, again to two decimal places. For example, across 1,000 samples the mean function coefficient for the first variable in variable set one on function I was 0.00, and the standard deviation about this mean across 1,000 samples was 0.46.

However, the table also presents results for function versus structure coefficients expressed as deviations from the known true population results for given coefficients. Deviations from known population values are presented to three decimal places in Table 6. This basis for comparison avoids the criticism of Barcikowski and Stevens (1975) raised by Thorndike (1976), i.e., Barcikowski and Stevens (1975) computed coefficients of concordance among results and thus only evaluated the ordering of variables according to the coefficients without considering the magnitudes of variations. In the present study, for each of the 1,000 samples, the mean deviation in a given matrix was computed, and Table 6 reports the mean of these average deviations and the standard deviations about these means ("Matrix Mean"). As reported in Table 6, the mean of the matrix mean deviations for function coefficients in the first variable set for this case was -.046 (SD=0.075).

For each of the 1,000 samples, the mean absolute deviation from known population values was computed, and the means and standard deviations of these mean absolute deviations are also reported in Table 6 ("|Matrix Mean|"). For example, as reported

in Table 6, the mean of the 1,000 mean absolute deviations for the function coefficients for the larger variable set in this case was 0.475 (SD=0.048).

The maximum deviation for each of the 1,000 samples for a given matrix was also computed, and the means (e.g., -0.292) and standard deviations (e.g., 1.376) of the 1,000 maximum deviations ("Maximum Dev") are reported in Table 6. Finally, the absolute value of the maximum deviation for each of the 1,000 samples for a given matrix was also computed, and the means (e.g., 1.392) and standard deviations (e.g., 0.201) of these absolute maximum deviations ("|Maximum Dev|") are reported in Table 6.

The results reported in Table 6 are reasonably representative of the results for the remaining 63 cases. Copies of the tables for these cases are not reported here, but are available from the author. However, the uniformity of results across research situations can be seen in the descriptive statistics for all 64 cases presented in Table 7.

INSERT TABLE 7 ABOUT HERE.

Discussion

Views on the relative value of canonical function and strucure coefficients have been somewhat stongly felt and adamantly expressed (cf. Harris, 1987; Kerlinger & Pedhazur, 1973, p. 344; Levine, 1977, p. 20; Meredith, 1964, p. 55). Most researchers have based their arguments on the psychometric meaning of these coefficients (e.g., Thompson, 1984, 1987). But a few researchers (Cooley & Lohnes, 1971; Darlington et al.,

1973) argue that structure coefficients should be preferred because they theoretically should be less influenced by sampling error than function coefficients. Previous Monte Carlo work (Barcikowski & Stevens, 1975; Thorndike & Weiss, 1973) has not yet conclusively resolved this last issue, and has been criticized on various grounds (e.g., Thorndike, 1976).

Results from Previous Related Studies

Three studies are most relevant to the questions raised in the present study: Thorndike and Weiss (1973), Huberty (1975), and Barcikowski and Stevens (1975). All three studies included comparisons of the influence of sampling error on both function and structure coefficients. However, only Huberty (1975) and Barcikowski and Stevens (1975) reported true Monte Carlo studies, and only Thorndike and Weiss (1973) and Barcikowski and Stevens (1975) studied results in the true canonical correlation case. Huberty (1975) investigated these coefficients in the discriminant analysis case, but this case is directly related to the more general canonical case, as noted by Tatsuoka (1953), Knapp (1978), and Thompson (1988a).

Table 8 describes the characteristics of these three studies, and of the present study. The studies can all be criticized on various grounds. For example, Thorndike and Weiss (1973) investigated canonical applications involving either 31 or 41 variables, and Barcikowski and Stevens (1975) investigated situations involving as many as 41 variables. The use of so many variables in a canonical analysis may not represent typical analytic practice, especially since some researchers prefer to

have 10 subjects per variable for their analyses. Similarly, though the investigation of sampling error effects when there are 37.5 (Huberty, 1975) or 428.5 (Barcikowski & Stevens, 1975) subjects per variable may be of theoretical interest, the use of such ratios may not generalize to typical practice. Nor do most researchers have access to 3,000 subjects in a given study (Barcikowski & Stevens, 1975).

INSERT TABLE 8 ABOUT HERE.

More importantly, the studies can be criticized with respect to the statistics used to compare the performance of function as against structure coefficients. Thorndike and Weiss (1973) employed two different real data sets, each randomly split into two different subsamples (n = 371 + 418 = 789; v = 21 + 10 = 31; and n = 246 + 259 = 505; v = 21 + 20 = 41). For each of the four analyses canonical composite scores were computed for the subjects in both of the two given research situations; these composites scores were computed in the same manner as the equivalent entries in Table 1 ("C1", "C2", "P1", and "P2"). Thorndike and Weiss (1973) cross-validated results by applying the function coefficients of one subsample (e.g., n=418) to the data of the subjects remaining in the same research situation (e.g., n=371).

But these are cross-validations of the canonical correlation coefficients (R_c's) and not evaluations of the stability of canonical function coefficients across subsamples. Function coefficients can appear to be quite different yet may yield equivalent synthetic composite variables, i.e., weights can be

what Cliff (1987, pp. 177-178) calls statistically sensitive or insensitive. "Insensitive" weights may result in good replication of Rc, but different interpretations of the meaning of the functions might still result. Indeed, Barcikowski and Stevens (1975, p. 363) note that, "The authors have several specific examples of where this has happened, so that it appears that it would not be unusual for it to happen in practice."

Huberty (1975) and Barcikowski and Stevens (1975), on the other hand, both employed Kendall's coefficient of concordance to compare results across 100 samples for each of the various research situations they investigated. However, as Thorndike (1976) notes, such procedures ignore fluctuations in the magnitudes of coefficients across samples. Researchers do not only interpret the ordering of variables with respect to a given set of coefficients, but also consider the magnitudes of coefficients for different variables. Evaluating stability of rankings of variables across samples treats all fluctuations in rankings as being equal in importance. As Thorndike (1976, p. 250) noted, "small changes in the numerical values of small weights, which might result in substantial changes in rank, would be of little consequence" as regards affecting the differential interpretation of results.

Although results in any single study are inherently limited, the results in these three previous studies merit some consideration. Thorndike and Weiss (1973, p. 130) conclude that "the canonical component loadings [structure coefficients] are consistent in cross-validation and in this sense they are stable

and more useful than the canonical beta weights." But the basis for this conclusion and the magnitude of stability differences is not made entirely clear.

Huberty (1975, p. 63) concluded that

> when the number of criterion groups is three, this reliability [of structure coefficients] is slightly higher than that of Index 1 [function coefficients], and vice versa for five criterion groups... Given a single run of the experiment, none of the indices can be expected to be sufficiently reliable to be of great practical value in identifying potent variables unless the total sample size is very large.

Barcikowski and Stevens (1975, pp. 363-364) concluded that,

> For the examples considered the components [structure coefficients] tended to be more reliable more often for the largest canonical correlation, especially when the correlations among the variables within each set are fairly high. The advantage of the components [structure coefficients], however, seemed to decrease for the second and third largest canonical correlations.

Barcikowski and Stevens (1975, pp. 364) also found that "The number of subjects per variable necessary to achieve reliability in determining the most important variables, using components or coefficients, was quite large, ranging from 42/1 to 68/1."

Monte Carlo Results in the Present Study

In the current study, the results presented in Table 6 for one of the 64 cases studied, similar results for the remaining 63 cases (available from the author), and the summary of all 64,000 canonical analysis presented in Table 7, all suggest that function and structure coefficients are influenced by sampling error to roughly equal degrees. For example, one basis for comparison would be the mean of the mean deviations in a given matrix from the true known population parameters. As reported in Table 6, for this one of the 64 population cases studied here, across 1,000 samples the mean of the mean matrix deviations from parameters for function and structure coefficients from the first variable set, and for structure and function coefficients from the second variable set, respectively, were -0.046 (SD=0.075), -0.046 (SD=0.068), 0.089 (SD=0.062), and 0.079 (SD=0.068).

Furthermore, the mean of the mean matrix deviations was consistently small and homogeneous across the 64 research situations investigated in the present study. As reported in Table 7, across the 64 population cases studied here, the average mean of the mean matrix deviations from parameters for function and structure coefficients from the first variable set, and for structure and function coefficients from the second variable set, respectively, were -0.035 (SD=0.068), -0.034 (SD=0.092), -0.044 (SD=0.123), and -0.042 (SD=0.093).

A comparison involving the largest deviation from known parameters for a given matrix yields similar conclusions. As reported in Table 6, for this one of the 64 population cases studied here, the mean of the 1,000 maximum matrix deviations from parameters for function and structure coefficients from the

first variable set, and for structure and function coefficients from the second variable set, respectively, were -0.292 (SD=1.376), -0.347 (SD=1.309), 0.023 (SD=1.226), and 0.065 (SD=1.278).

Furthermore, the means of 1,000 maximum matrix deviations were consistently small and homogeneous across the 64 research situations investigated in the present study. As reported in Table 7, across the 64 population cases studied here, the average mean of the maximum matrix deviations from parameters for function and structure coefficients from the first variable set, and for structure and function coefficients from the second variable set, respectively, were -0.080 (SD=0.468), -0.089 (SD=0.436), -0.028 (SD=0.336), and -0.005 (SD=0.384).

Comparisons based on the absolute values of the largest deviations from known population parameters also tend to suggest that function and structure coefficients are roughly equally affected by sampling error influences. For example, as noted in Table 7, across the 64 population cases studied here, the average mean of the mean absolute matrix deviations from parameters for function and structure coefficients from the first variable set, and for structure and function coefficients from the second variable set, respectively, were 0.355 (SD=0.156), 0.325 (SD=0.137), 0.292 (SD=0.175), and 0.318 (SD=0.178). Similarly, as reported in Table 7, across the 64 population cases studied here, the average mean of the absolute maximum matrix deviations from parameters for function and structure coefficients from the first variable set, and for structure and function coefficients from

the second variable set, respectively, were 1.192 (SD=0.435), 1.053 (SD=0.397), 0.889 (SD=0.533), and 0.972 (SD=0.587).

Overall, as indicated by results presented in Table 7, some results in the present suggest that function coefficients are less influenced by sampling error than are structure coefficients. For example, as reported in Table 7, the average mean of matrix deviations for functions coefficients for the smaller variable set was -0.042 (SD=0.093), while the average mean of matrix deviations for structure coefficients for the smaller variable set was -0.044 (SD=0.123). But contradictory results are also available. For example, the average mean of matrix deviations for structure coefficients for the larger variable set was -0.034 (SD=0.092), while the average mean of matrix deviations for function coefficients for the larger variable set was -0.035 (SD=0.068).

In general, the results do not indicate that either type of coefficient is inherently less sensitive to sampling error, notwithstanding previous speculation (e.g., Cooley & Lohnes, 1971, p. 55; Darlington et al., 1973). This tends to be true across different frameworks for comparison, including some not reported here (e.g., maximum and absolute maximum deviations from known population parameters only on the first function). Differences are somewhat more likely when population intradomain correlation coefficients are larger, and in these cases function coefficients appeared to be somewhat less sensitive to sampling error. A greater number of cases in which intradomain correlation coefficients were larger might have resulted in more differences in the comparisons of effects of sampling error on function as

against structure coefficients. Still, it appears that any preference for interpretation of one coefficient over the other must be primarily based on psychometric grounds rather than on the basis of estimate stability.

These results are consistent with previous research, although this research has been limited, as noted. Huberty (1975) reported that structure coefficients were less sensitive to sampling error with k=3 criterion variable groups, but that function coefficients tended to be superior with k=5 groups. Similarly, Barcikowski and Stevens (1975) found that on the first canonical function structure coefficients tended to be less sensitive to sampling error, but that the superiority of structure coefficients tended to decrease for the second and third functions. Thus, results do not consistently suggest that a particular set of coefficients is less sensitive to sampling error.

In summary, good psychometric arguments can be offered that researchers must consider structure coefficients when interpreting canonical results (Thompson, 1987, 1988a; Thompson & Borrello, 1985). Interpretations based only on function coefficients can be seriously misleading. But results in previous studies (Barcikowski & Stevens, 1975; Huberty, 1975; Thorndike & Weiss, 1973) and in the present study do not suggest that either structure or function coefficients are inherently differentially sensitive to sampling error.

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Table 1
Hypothetical Observed and Latent Scores

X	Y	A	B	ZX	ZY	ZA	ZB	C1	C2	P1	P2
1	11	5	1	-1.525	1.248	-.416	.957	.303	-1.934	-.182	-.995
2	5	3	1	-1.248	-.416	-.971	.957	-.998	-.866	-.733	-1.076
3	2	2	1	-.971	-1.248	-1.248	.957	-1.578	-.212	-1.009	-1.117
4	8	8	0	-.693	.416	.416	-.957	.006	-.804	.182	.995
5	4	4	0	-.416	-.693	-.693	-.957	-.814	-.012	-.921	.832
6	12	10	1	-.139	1.525	.971	.957	1.251	-.880	1.197	-.791
7	7	6	1	.139	.139	-.139	.957	.191	.050	.094	-.954
8	1	1	0	.416	-1.525	-1.525	-.957	-1.110	1.118	-1.748	.710
9	9	12	0	.693	.693	1.525	-.957	.955	.250	1.284	1.157
10	3	7	0	.971	-.971	.139	-.957	-.346	1.319	-.094	.954
11	6	9	0	1.248	-.139	.693	-.957	.517	1.142	.457	1.035
12	10	11	1	1.525	.971	1.248	.957	1.621	.827	1.472	-.750

Note. Variables "X", "Y", "A", and "B", and their Z-score equivalents are "observed" scores. The remaining scores are "latent" or "synthetic" scores since they are created by adding together the observed scores once they have been weighted by coefficients analogous to beta weights, i.e., the canonical function coefficients.

Table 2
Canonical Results for Hypothetical Data

Variable/ Coefficient	Function I Coefficients Func	Str	Sq S	Index	Function II Coefficients Func	Str	Sq S	Index	2 h
X	.511	.499	24.87%	.470	.860	.867	75.13%	.460	1.000
Y	.867	.860	73.91%	.809	-.499	-.511	26.09%	-.271	1.000
Adequacy			49.39%				50.61%		
Redundancy			43.78%				14.24%		
R_c^2			88.63%				28.13%		
Redundancy			42.69%				14.58%		
Adequacy			48.17%				51.83%		
A	.994	.971	94.20%	.914	.147	.241	5.80%	.128	1.000
B	.242	.146	2.13%	.138	-.975	-.989	97.87%	-.525	1.000

Table 3
Bivariate Equivalents of Canonical Coefficients

Variable	Type	Variable	Type	Result
C1	Latent	P1	Latent	Function I Rc
C2	Latent	P2	Latent	Function II Rc
X	Observed	C1	Latent	Structure Coef. for X on Function I
Y	Observed	C1	Latent	Structure Coef. for Y on Function I
A	Observed	P1	Latent	Structure Coef. for A on Function I
B	Observed	P1	Latent	Structure Coef. for B on Function I
X	Observed	P1	Latent	Index Coef. for X on Function I
Y	Observed	P1	Latent	Index Coef. for Y on Function I
A	Observed	C1	Latent	Index Coef. for A on Function I
B	Observed	C1	Latent	Index Coef. for B on Function I

Table 4
Actual Population Correlation Coefficients for
Matrix #1 (Above Diagonal) and Matrix #2 (Below Diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12
1		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00		.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.10		.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.10	.00	.00		.00	.00	.00	.00
9	.00	.00	.00	.10	.00	.00	.00	.00		.00	.00	.00
10	.00	.00	.10	.00	.00	.00	.00	.00	.00		.00	.00
11	.31	.60	.00	.00	.00	.00	.00	.00	.00	.00		.00
12	.61	.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	

Note. Variable combination "A" consisted of 12 variables [set 1 = variables 1-6; set 2 = variables 7-12]; variable combination "B" consisted of 8 variables [set 1 = variables 1-4; set 2 = variables 9-12]; variable combination "C" consisted of 6 variables [set 1 = variables 1-4; set 2 = variables 11-12]; variable combination "D" consisted on 12 variables [set 1 = variables 1-10; set 2 = variables 11-12].

Table 5
Actual Population Correlation Coefficients for
Matrix #3 (Above Diagonal) and Matrix #4 (Below Diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12
1		.58	.29	.10	.10	.10	.10	.10	.10	.10	.30	.60
2	.24		.30	.10	.10	.10	.10	.10	.10	.10	.30	.29
3	.24	.25		.10	.10	.10	.10	.10	.10	.10	.10	.09
4	.25	.25	.25		.10	.10	.10	.10	.10	.10	.10	.10
5	.25	.26	.26	.25		.10	.10	.10	.10	.10	.10	.10
6	.24	.25	.25	.25	.25		.10	.10	.10	.10	.10	.10
7	.25	.26	.25	.25	.25	.25		.10	.10	.10	.10	.10
8	.25	.26	.26	.26	.26	.25	.26		.10	.10	.10	.10
9	.25	.25	.25	.25	.25	.25	.25	.25		.10	.10	.10
10	.25	.26	.26	.26	.26	.26	.26	.26	.26		.30	.30
11	.25	.25	.25	.25	.25	.25	.25	.25	.25	.26		.60
12	.25	.26	.25	.25	.25	.25	.25	.25	.25	.26	.25	

Note. Variable combination "A" consisted of 12 variables [set 1 = variables 1-6; set 2 = variables 7-12]; variable combination "B" consisted of 8 variables [set 1 = variables 1-4; set 2 = variables 9-12]; variable combination "C" consisted of 6 variables [set 1 = variables 1-4; set 2 = variables 11-12]; variable combination "D" consisted on 12 variables [set 1 = variables 1-10; set 2 = variables 11-12].

Table 6
Descriptive Statistics for 1,000 Samples from Population Matrix #1 ($\underline{v}$=12 [6+6], $\underline{n}$=3*$\underline{v}$)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	00/46	00/46	-02/44	00/43	00/44	00/44
2	00/43	01/44	00/45	-01/43	03/45	02/46
3	-02/45	00/44	-02/45	00/44	00/44	00/42
4	00/44	01/44	-02/44	01/46	-02/44	01/43
5	02/42	01/45	00/43	00/44	-01/44	-03/46
6	-02/44	03/43	-01/44	01/46	-02/44	02/45
Matrix Mean		-.046	.075			
|Matrix Mean|		.475	.048			
Maximum Dev		-.292	1.376			
|Maximum Dev|		1.392	.201			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	00/42	-01/42	-02/40	01/40	00/40	-01/40
2	00/40	00/40	00/42	00/40	03/41	01/42
3	-02/42	00/41	-02/42	-01/40	00/40	00/39
4	00/41	01/41	-03/41	00/42	-02/41	01/39
5	02/40	01/41	00/40	01/40	-01/41	-02/42
6	-01/41	03/40	-01/40	01/42	-01/41	02/41
Matrix Mean		-.046	.068			
|Matrix Mean|		.456	.045			
Maximum Dev		-.347	1.309			
|Maximum Dev|		1.339	.192			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	31/26	01/40	00/40	01/41	00/42	02/42
2	-01/42	30/25	01/42	-02/40	00/41	-02/41
3	00/41	00/40	31/26	-01/42	02/41	01/40
4	-01/41	-01/41	00/40	32/26	-02/41	-01/41
5	-01/40	01/42	00/41	-01/41	31/25	00/40
6	01/40	-02/41	01/41	00/39	-01/42	31/26
Matrix Mean		.089	.062			
|Matrix Mean|		.433	.048			
Maximum Dev		.023	1.226			
|Maximum Dev|		1.214	.169			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	37/25	01/45	00/42	00/44	00/45	02/45
2	00/45	36/24	00/45	-02/43	00/44	-01/45
3	01/44	00/44	36/25	-02/45	01/44	01/44
4	-01/44	-01/44	-01/44	38/25	-03/43	-01/44
5	-01/44	00/46	00/46	-01/44	35/23	00/43
6	01/44	-01/44	01/45	00/43	00/45	37/24
Matrix Mean		.079	.068			

|Matrix Mean|	.448	.049
Maximum Dev	.065	1.278
|Maximum Dev|	1.265	.187

Table 7
Descriptive Statistics for 64 Sets of
Descriptive Statistics Each Involving 1,000 Random Samples

Larger (or Equal Size) Variable Set

Function Coefficients

	Mean	SD
Mean of all Deviations in Matrix	-.035	.068
SD of all Deviations in Matrix	.073	.048
Mean of all Absolute Deviations in Matrix	.355	.156
SD of all Absolute Deviations in Matrix	.080	.043
Largest Deviation in Matrix	-.080	.468
SD Largest Deviation in Matrix	1.160	.409
Largest Absolute Deviation in Matrix	1.192	.435
SD Largest Absolute Deviation in Matrix	.316	.155

Structure Coefficients

	Mean	SD
Mean of all Deviations in Matrix	-.034	.092
SD of all Deviations in Matrix	.094	.056
Mean of all Absolute Deviations in Matrix	.325	.137
SD of all Absolute Deviations in Matrix	.075	.041
Largest Deviation in Matrix	-.089	.436
SD Largest Deviation in Matrix	1.021	.372
Largest Absolute Deviation in Matrix	1.053	.397
SD Largest Absolute Deviation in Matrix	.285	.175

Smaller (or Equal Size) Variable Set

Structure Coefficients

	Mean	SD
Mean of all Deviations in Matrix	-.044	.123
SD of all Deviations in Matrix	.123	.107
Mean of all Absolute Deviations in Matrix	.292	.175
SD of all Absolute Deviations in Matrix	.120	.101
Largest Deviation in Matrix	-.028	.336
SD Largest Deviation in Matrix	.934	.505
Largest Absolute Deviation in Matrix	.889	.533
SD Largest Absolute Deviation in Matrix	.331	.237

Function Coefficients

	Mean	SD
Mean of all Deviations in Matrix	-.042	.093
SD of all Deviations in Matrix	.097	.073
Mean of all Absolute Deviations in Matrix	.318	.178
SD of all Absolute Deviations in Matrix	.131	.103
Largest Deviation in Matrix	-.005	.384
SD Largest Deviation in Matrix	1.011	.549
Largest Absolute Deviation in Matrix	.972	.587
SD Largest Absolute Deviation in Matrix	.351	.239

Table 8
Characteristics of Four Related Studies

Study Characteristics	Study: Thorndike & Weiss	Huberty[a]	Barcikowski & Stevens	Present
Sample Sizes	246 - 418	90 - 450	200 - 3000	18 - 480
No. of Variables	31 & 41	12 & 14	7 - 41	6 - 12
Largest V Set	21 & 21	10 & 10	5 - 21	4 - 10
Smallest V Set	10 & 20	2 & 4[b]	2 - 20	2 - 6
n per Variable	6.0 - 13.5	6.4 - 37.5	4.9 - 428.6	3 - 40
n samples	1 & 1	100	100	1000
Parameter Data[c]	Real	Synthetic	Modelled	Synthetic
n of Studies[d]	2 (1+1)	8 (2x4)	120 (8x15)	64 (4x4x4)

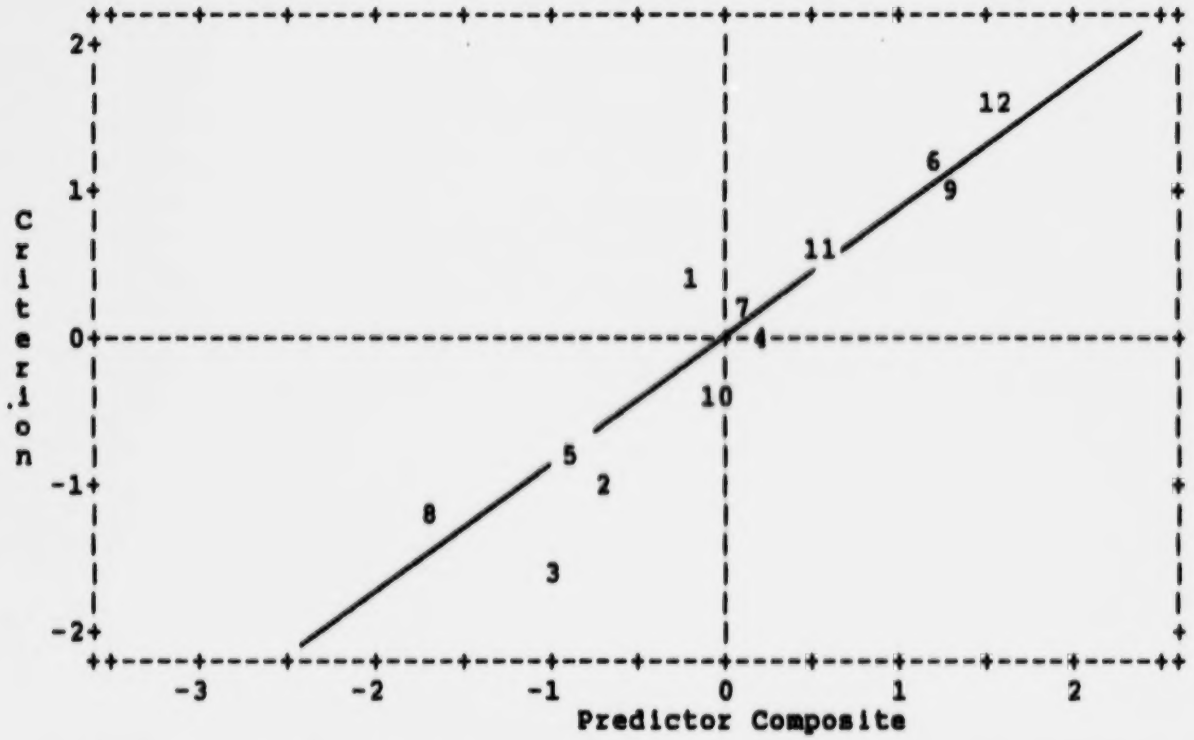
[a] Huberty actually performed a discriminant analysis, but this is equivalent to a canonical analysis in which group membership is dummy coded (Knapp, 1978; Tatsuoka, 1953; Thompson, 1988a).

[b] Huberty employed analyses with k=3 and k=5 groups, which results, respectively, in 2 and 4 dummy code variables.

[c] "Real" data were data from an actual research study from real subjects. "Modelled" data were synthetic data created for a population based on the sample statistics from actual studies employing real subjects. "Synthetic" data were population data created to reflect desired variations not based on specific study results from previous actual studies.

[d] "n of Studies" is the number of research situation variations investigated, each "n samples" times, in a given study.

APPENDIX A:
Scattergram of Canonical Composite Scores on Function I



Note. The numbers plotted within the scattergram are the subject ID codes also constituting variable "X" in Table 1. For example, on Function I subject #1 had a canonical criterion composite score of .303 and a canonical predictor composite score of -.182. The slope of the bivariate regression line is Rc (0.9414).

APPENDIX B:
Population Parameters for 16 (4x4) Research Situations

Matrix	Variables	Population Parameter Squared Rc I	II	III	IV	V	VI	lambda
1	12= 6+6	.00	.00	.00	.00	.00	.00	1.00
	8= 4+4	.00	.00	.00	.00			1.00
	6= 4+2	.00	.00					1.00
	12=10+2	.00	.00					1.00
2	12= 6+6	.82	.09	.01	.01	.01	.01	.16
	8= 4+4	.82	.09	.01	.01			.16
	6= 4+2	.82	.09					.16
	12=10+2	.82	.09					.16
3	12= 6+6	.40	.11	.03	.00	.00	.00	.52
	8= 4+4	.40	.07	.02	.00			.55
	6= 4+2	.39	.06					.57
	12=10+2	.44	.09					.51
4	12= 6+6	.45	.00	.00	.00	.00	.00	.55
	8= 4+4	.33	.00	.00	.00			.67
	6= 4+2	.23	.00					.76
	12=10+2	.31	.00					.69
	Mean	.389	.043	.009	.003	.003	.003	.591
	SD	.295	.044	.009	.003	.003	.003	.303

APPENDIX C:

Complete Set of Descriptive Statistics for 64 Sets of Descriptive Statistics Each Involving 1,000 Samples

Note. The layout of the tables is explained in the narrative.

Table C1: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=12 [6+6], n=3*y)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	00/46	00/46	-02/44	00/43	00/44	00/44
2	00/43	01/44	00/45	-01/43	03/45	02/46
3	-02/45	00/44	-02/45	00/44	00/44	00/42
4	00/44	01/44	-02/44	01/46	-02/44	01/43
5	02/42	01/45	00/43	00/44	-01/44	-03/46
6	-02/44	03/43	-01/44	01/46	-02/44	02/45
Matrix Mean		-.046	.075			
|Matrix Mean|		.475	.048			
Maximum Dev		-.292	1.376			
|Maximum Dev|		1.392	.201			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	00/42	-01/42	-02/40	01/40	00/40	-01/40
2	00/40	00/40	00/42	00/40	03/41	01/42
3	-02/42	00/41	-02/42	-01/40	00/40	00/39
4	00/41	01/41	-03/41	00/42	-02/41	01/39
5	02/40	01/41	00/40	01/40	-01/41	-02/42
6	-01/41	03/40	-01/40	01/42	-01/41	02/41
Matrix Mean		-.046	.068			
|Matrix Mean|		.456	.045			
Maximum Dev		-.347	1.309			
|Maximum Dev|		1.339	.192			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	31/26	01/40	00/40	01/41	00/42	02/42
2	-01/42	30/25	01/42	-02/40	00/41	-02/41
3	00/41	00/40	31/26	-01/42	02/41	01/40
4	-01/41	-01/41	00/40	32/26	-02/41	-01/41
5	-01/40	01/42	00/41	-01/41	31/25	00/40
6	01/40	-02/41	01/41	00/39	-01/42	31/26
Matrix Mean		.089	.062			
|Matrix Mean|		.433	.048			
Maximum Dev		.023	1.226			
|Maximum Dev|		1.214	.169			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	37/25	01/45	00/42	00/44	00/45	02/45
2	00/45	36/24	00/45	-02/43	00/44	-01/45
3	01/44	00/44	36/25	-02/45	01/44	01/44
4	-01/44	-01/44	-01/44	38/25	-03/43	-01/44
5	-01/44	00/46	00/46	-01/44	35/23	00/43
6	01/44	-01/44	01/45	00/43	00/45	37/24
Matrix Mean		.079	.068			
|Matrix Mean|		.448	.049			
Maximum Dev		.065	1.278			
|Maximum Dev|		1.265	.187			

Table C2: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (v=8 [4+4], n=3*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	-01/55	02/54	00/55	-02/52
2	-03/52	02/54	00/54	01/55
3	00/55	-01/54	01/52	02/55
4	01/53	01/53	00/55	-01/55
Matrix Mean		-.039	.135	
|Matrix Mean|		.592	.097	
Maximum Dev		-.244	1.450	
|Maximum Dev|		1.453	.224	

Structure Coefficients

	I	II	III	IV
Row 1	-01/51	01/50	00/50	-02/48
2	-03/49	03/50	00/50	00/50
3	-01/51	-02/50	00/49	03/50
4	02/50	02/49	00/50	-01/50
Matrix Mean		-.039	.125	
|Matrix Mean|		.570	.091	
Maximum Dev		-.221	1.395	
|Maximum Dev|		1.396	.210	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	40/30	01/50	00/51	-02/49
2	01/51	38/31	03/49	01/51
3	-01/50	-01/50	40/31	02/49
4	-02/49	02/51	-01/50	41/30
Matrix Mean		.001	.104	
|Matrix Mean|		.471	.088	
Maximum Dev		.067	1.361	
|Maximum Dev|		1.345	.216	

Function Coefficients

	I	II	III	IV
Row 1	45/28	02/54	00/55	-02/53
2	01/55	44/29	03/53	00/55
3	00/54	-01/54	46/29	01/53
4	-04/52	03/55	-01/52	46/30
Matrix Mean		-.014	.107	
|Matrix Mean|		.480	.090	
Maximum Dev		.080	1.410	
|Maximum Dev|		1.393	.231	

Table C3: Descriptive Statistics for 1,000 Samples from Population Matrix #1 ($\underline{v}$=6 [4+2], $\underline{n}$=3*$\underline{v}$)

Larger Variable Set
Function Coefficients

	I	II
Row 1	00/56	-01/55
2	00/56	01/56
3	00/57	-01/56
4	01/54	00/56
Matrix Mean	-.208	.201
|Matrix Mean|	.499	.147
Maximum Dev	-.408	1.288
|Maximum Dev|	1.320	.284

Structure Coefficients

	I	II
Row 1	-02/51	-01/49
2	00/50	01/50
3	00/50	00/50
4	-01/48	01/51
Matrix Mean	-.206	.178
|Matrix Mean|	.472	.137
Maximum Dev	-.326	1.227
|Maximum Dev|	1.242	.264

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	62/33	-01/71
2	-01/71	62/34
Matrix Mean	-.200	.208
|Matrix Mean|	.504	.336
Maximum Dev	-.125	1.302
|Maximum Dev|	1.144	.633

Function Coefficients

	I	II
Row 1	66/32	00/73
2	-01/73	66/32
Matrix Mean	-.217	.202
|Matrix Mean|	.500	.342
Maximum Dev	-.170	1.318
|Maximum Dev|	1.164	.641

Table C4: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=12 [10+2], n=3*y)

Larger Variable Set
Function Coefficients

	I	II
Row 1	00/38	01/38
2	01/37	00/36
3	-01/39	01/36
4	03/37	00/38
5	-01/37	01/36
6	00/36	00/37
7	01/37	03/37
8	-01/38	01/37
9	01/36	-01/36
10	00/37	00/37
Matrix Mean	-.090	.080
|Matrix Mean|	.379	.056
Maximum Dev	-.735	.817
|Maximum Dev|	1.078	.213

Structure Coefficients

	I	II
Row 1	01/32	02/32
2	01/32	-01/31
3	00/33	01/31
4	03/32	00/32
5	-01/31	00/31
6	-01/30	00/31
7	01/31	02/31
8	-01/31	01/32
9	00/31	00/31
10	01/31	01/32
Matrix Mean	-.089	.068
|Matrix Mean|	.346	.048
Maximum Dev	-.736	.695
|Maximum Dev|	.993	.191

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	64/32	01/70
2	00/70	64/32
Matrix Mean	-.161	.183
|Matrix Mean|	.495	.338
Maximum Dev	-.042	1.244
|Maximum Dev|	1.065	.642

Function Coefficients

	I	II
Row 1	65/31	00/71
2	-01/71	65/31
Matrix Mean	-.166	.180
|Matrix Mean|	.491	.342
Maximum Dev	-.147	1.244
|Maximum Dev|	1.073	.645

Table C5: Descriptive Statistics for 1,000 Samples from Population Matrix #1 ($\underline{v}$=12 [6+6], $\underline{n}$=10*$\underline{v}$)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	-02/41	-01/41	00/42	00/41	01/42	00/42
2	00/40	00/41	00/43	-01/42	01/42	-01/41
3	01/42	02/42	02/41	00/42	01/40	-01/42
4	03/43	02/41	00/41	-01/41	02/41	00/42
5	-01/42	01/42	00/42	02/42	01/40	02/42
6	02/42	-01/41	00/41	02/41	-01/43	00/41
Matrix Mean		-.050	.069			
|Matrix Mean|		.462	.048			
Maximum Dev		-.345	1.341			
|Maximum Dev|		1.371	.191			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	-02/40	-01/41	00/40	00/40	01/42	00/41
2	00/39	00/41	00/42	-01/41	01/42	-01/40
3	01/41	02/42	02/40	00/41	00/40	00/40
4	03/42	02/40	-01/40	-01/41	01/40	01/41
5	-01/41	01/42	00/41	02/41	02/39	02/41
6	02/41	-01/40	01/40	02/40	-01/43	00/41
Matrix Mean		-.051	.067			
|Matrix Mean|		.456	.048			
Maximum Dev		-.395	1.312			
|Maximum Dev|		1.357	.187			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	32/23	00/41	02/40	-01/42	01/41	-03/41
2	01/40	34/24	01/41	-02/40	01/41	00/41
3	02/42	00/40	34/24	01/40	01/41	00/41
4	-01/41	03/41	00/40	34/23	-03/41	00/40
5	-01/42	-01/41	00/41	01/41	32/23	-02/40
6	03/40	-01/39	02/41	-01/41	01/42	33/24
Matrix Mean		.083	.060			
|Matrix Mean|		.435	.036			
Maximum Dev		.038	1.231			
|Maximum Dev|		1.219	.169			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	34/22	00/42	02/41	-01/43	01/41	-03/41
2	01/41	36/24	00/42	-01/41	01/42	00/42
3	02/42	00/41	35/23	02/41	01/42	00/43
4	-01/42	04/42	00/41	34/22	-03/42	-01/41
5	-02/43	-01/42	-01/42	01/42	33/22	-02/42
6	03/41	-01/40	01/42	-01/42	01/43	34/23
Matrix Mean		.081	.060			
|Matrix Mean|		.439	.047			
Maximum Dev		.026	1.247			
|Maximum Dev|		1.235	.168			

Table C6: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=8 [4+4], n=10*y)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	00/52	-03/52	00/50	00/50
2	-01/51	02/50	00/50	01/52
3	02/52	-01/49	01/52	-01/51
4	00/50	01/52	03/51	03/51
Matrix Mean		-.042	.128	
|Matrix Mean|		.576	.094	
Maximum Dev		-.262	1.415	
|Maximum Dev|		1.423	.207	

Structure Coefficients

	I	II	III	IV
Row 1	-01/50	-03/51	01/50	00/49
2	-01/50	02/50	00/49	01/51
3	02/50	-01/48	00/51	-01/50
4	-01/49	01/50	03/50	03/50
Matrix Mean		-.041	.126	
|Matrix Mean|		.571	.094	
Maximum Dev		-.236	1.404	
|Maximum Dev|		1.407	.206	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	40/27	00/50	00/51	00/50
2	01/50	42/28	00/49	00/50
3	-01/51	00/48	40/28	-01/52
4	-03/50	00/50	-02/51	41/27
Matrix Mean		.002	.103	
|Matrix Mean|		.472	.088	
Maximum Dev		.027	1.368	
|Maximum Dev|		1.349	.220	

Function Coefficients

	I	II	III	IV
Row 1	42/26	00/51	00/52	00/50
2	01/52	44/27	00/50	00/51
3	-01/52	00/49	42/27	-01/52
4	-02/51	00/52	-02/52	42/26
Matrix Mean		-.003	.105	
|Matrix Mean|		.474	.089	
Maximum Dev		.028	1.381	
|Maximum Dev|		1.363	.220	

Table C7: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=6 [4+2], n=10*y)

Larger Variable Set
Function Coefficients

	I	II
Row 1	00/50	-01/52
2	-02/53	-01/50
3	00/52	-02/52
4	01/51	00/51
Matrix Mean	-.203	.181
|Matrix Mean|	.475	.141
Maximum Dev	-.336	1.248
|Maximum Dev|	1.262	.276

Structure Coefficients

	I	II
Row 1	00/49	-01/51
2	-03/51	00/48
3	00/50	-02/51
4	02/50	00/50
Matrix Mean	-.204	.174
|Matrix Mean|	.468	.138
Maximum Dev	-.304	1.241
|Maximum Dev|	1.248	.270

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	64/31	04/70
2	-03/70	64/31
Matrix Mean	-.218	.160
|Matrix Mean|	.516	.342
Maximum Dev	-.206	1.274
|Maximum Dev|	1.124	.634

Function Coefficients

	I	II
Row 1	65/30	05/70
2	-03/71	65/30
Matrix Mean	-.224	.163
|Matrix Mean|	.513	.342
Maximum Dev	-.128	1.290
|Maximum Dev|	1.129	.636

Table C8: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=12 [10+2], n=10*y)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-02/33	00/34
2	-01/34	02/33
3	02/33	00/33
4	00/32	01/32
5	-02/33	-01/32
6	01/31	02/32
7	00/33	00/34
8	00/33	00/34
9	02/34	-00/33
10	-01/33	-01/34
Matrix Mean	-.086	.074
|Matrix Mean|	.358	.050
Maximum Dev	-.768	.701
|Maximum Dev|	1.021	.195

Structure Coefficients

	I	II
Row 1	-02/32	00/33
2	-01/33	02/31
3	02/32	00/32
4	00/30	01/31
5	-02/31	00/30
6	01/30	02/30
7	00/31	00/32
8	00/32	00/32
9	01/32	00/32
10	00/31	-01/32
Matrix Mean	-.085	.071
|Matrix Mean|	.350	.048
Maximum Dev	-.790	.650
|Maximum Dev|	1.005	.193

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	63/31	01/71
2	-01/71	63/31
Matrix Mean	-.159	.169
|Matrix Mean|	.487	.346
Maximum Dev	-.135	1.209
|Maximum Dev|	1.025	.656

Function Coefficients

	I	II
Row 1	64/30	01/71
2	-02/71	64/31
Matrix Mean	-.160	.169
|Matrix Mean|	.487	.348
Maximum Dev	-.048	1.218
|Maximum Dev|	1.027	.657

Table C9: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (v=12 [6+6], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	00/41	03/42	01/42	-01/41	-02/41	03/40
2	-01/41	01/41	00/41	01/42	00/40	-01/41
3	02/41	01/42	00/40	00/40	00/42	00/41
4	02/40	00/41	02/40	00/42	00/42	00/42
5	-03/43	00/40	02/41	00/41	01/41	00/41
6	00/40	01/40	00/42	02/41	00/41	01/42
Matrix Mean		-.050	.069			
|Matrix Mean|		.459	.048			
Maximum Dev		-.347	1.321			
|Maximum Dev|		1.352	.189			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	00/41	03/42	01/41	-02/40	-02/40	03/40
2	-01/40	02/41	00/41	01/42	00/40	00/41
3	02/41	01/42	00/39	00/40	00/42	01/40
4	01/40	00/40	02/40	00/41	00/42	00/41
5	-03/42	00/40	02/41	00/41	01/40	00/41
6	00/40	01/40	00/42	02/40	00/41	-01/41
Matrix Mean		-.050	.068			
|Matrix Mean|		.457	.048			
Maximum Dev		-.350	1.313			
|Maximum Dev|		1.345	.188			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	33/23	01/40	00/40	00/42	02/40	00/42
2	00/41	34/22	01/42	03/40	01/40	-01/40
3	02/40	01/41	34/23	-01/40	00/40	00/42
4	-01/41	-02/41	-02/41	34/23	00/41	02/40
5	-01/41	01/42	00/41	01/40	34/23	-01/41
6	-02/41	00/40	-01/40	-01/42	01/41	34/22
Matrix Mean		.081	.059			
|Matrix Mean|		.428	.047			
Maximum Dev		.040	1.214			
|Maximum Dev|		1.201	.177			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	33/23	01/41	00/40	00/42	02/41	00/42
2	00/41	35/22	01/42	03/41	01/41	-01/41
3	02/41	01/41	35/23	-01/40	00/41	00/42
4	-01/41	-02/41	-02/42	34/23	00/41	02/40
5	-01/41	01/42	00/41	01/40	34/23	-01/41
6	-02/41	00/41	-01/40	-01/42	01/41	34/22
Matrix Mean		.080	.060			
|Matrix Mean|		.429	.048			
Maximum Dev		.052	1.217			
|Maximum Dev|		1.204	.179			

Table C10: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=8 [4+4], n=25*y)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	00/51	-01/50	01/50	00/50
2	01/50	-01/51	-02/50	00/49
3	00/50	02/50	-01/51	-01/50
4	-02/50	00/50	00/50	01/51
Matrix Mean		-.035	.129	
|Matrix Mean|		.568	.095	
Maximum Dev		-.254	1.409	
|Maximum Dev|		1.415	.213	

Structure Coefficients

	I	II	III	IV
Row 1	00/50	-01/49	01/50	-01/50
2	01/50	-01/51	-02/50	01/49
3	00/50	02/50	-01/51	-01/50
4	-02/50	00/50	00/49	01/51
Matrix Mean		-.035	.127	
|Matrix Mean|		.565	.095	
Maximum Dev		-.271	1.402	
|Maximum Dev|		1.411	.210	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	44/27	-01/49	00/49	01/50
2	-01/48	42/27	-01/52	02/50
3	00/50	00/50	42/27	-01/50
4	-03/50	00/51	00/49	42/26
Matrix Mean		-.003	.106	
|Matrix Mean|		.467	.087	
Maximum Dev		.112	1.362	
|Maximum Dev|		1.349	.216	

Function Coefficients

	I	II	III	IV
Row 1	45/26	-01/49	00/50	00/51
2	-01/49	42/26	-01/52	02/50
3	00/50	00/51	42/26	-01/50
4	-03/50	00/52	00/49	43/26
Matrix Mean		-.004	.107	
|Matrix Mean|		.467	.087	
Maximum Dev		.111	1.366	
|Maximum Dev|		1.353	.215	

Table C11: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (v=6 [4+2], n=25*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	02/50	-01/51
2	00/49	02/50
3	02/51	01/51
4	02/51	01/50
Matrix Mean	-.220	.179
|Matrix Mean|	.476	.136
Maximum Dev	-.333	1.246
|Maximum Dev|	1.260	.275

Structure Coefficients

	I	II
Row 1	02/50	-01/50
2	00/48	02/49
3	02/50	00/51
4	02/51	01/49
Matrix Mean	-.220	.177
|Matrix Mean|	.473	.135
Maximum Dev	-.317	1.242
|Maximum Dev|	1.252	.273

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	63/32	01/71
2	-01/71	63/31
Matrix Mean	-.208	.173
|Matrix Mean|	.502	.349
Maximum Dev	-.288	1.226
|Maximum Dev|	1.081	.645

Function Coefficients

	I	II
Row 1	64/31	00/71
2	-01/71	63/31
Matrix Mean	-.208	.172
|Matrix Mean|	.500	.348
Maximum Dev	-.006	1.261
|Maximum Dev|	1.083	.645

Table C12: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=12 [10+2], n=25*y)

Larger Variable Set
Function Coefficients

	I	II
Row 1	01/32	01/32
2	01/31	00/32
3	01/33	-01/31
4	01/31	-01/32
5	01/32	00/32
6	00/31	-02/32
7	01/33	00/32
8	-01/31	01/33
9	-01/32	-01/33
10	-01/33	00/32
Matrix Mean	-.084	.071
|Matrix Mean|	.349	.048
Maximum Dev	-.740	.700
|Maximum Dev|	.998	.202

Structure Coefficients

	I	II
Row 1	01/32	00/32
2	01/31	00/31
3	01/33	-01/30
4	00/31	-01/32
5	01/32	00/32
6	00/31	-02/31
7	01/32	00/32
8	-01/31	01/32
9	-01/32	-01/32
10	-02/33	00/31
Matrix Mean	-.084	.070
|Matrix Mean|	.346	.047
Maximum Dev	-.741	.689
|Maximum Dev|	.991	.204

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	64/31	02/70
2	-02/70	64/32
Matrix Mean	-.160	.171
|Matrix Mean|	.485	.343
Maximum Dev	-.171	1.184
|Maximum Dev|	1.004	.648

Function Coefficients

	I	II
Row 1	64/32	02/71
2	-02/70	64/31
Matrix Mean	-.159	.170
|Matrix Mean|	.485	.345
Maximum Dev	.011	1.197
|Maximum Dev|	1.005	.649

Table C13: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=12 [6+6], n=40*y)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	-02/42	-01/41	00/40	00/41	-02/41	02/41
2	-02/39	00/41	-02/42	-03/41	00/42	01/41
3	03/40	02/41	-01/41	00/41	01/42	-02/41
4	00/41	01/41	00/41	-02/40	00/41	00/41
5	-03/41	00/42	00/42	02/41	-01/40	01/40
6	-03/41	00/40	02/40	00/41	01/40	00/42
Matrix Mean		-.044	.068			
|Matrix Mean|		.454	.046			
Maximum Dev		-.262	1.333			
|Maximum Dev|		1.344	.193			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	-02/42	-02/41	00/39	00/41	-02/41	02/41
2	-02/39	00/40	-02/42	-03/41	00/41	01/41
3	03/40	02/41	-01/41	00/41	01/41	-02/41
4	00/41	01/41	00/41	-02/40	00/41	00/41
5	-03/41	00/41	00/42	02/40	-01/40	-01/39
6	-03/41	00/40	02/40	00/41	01/40	00/42
Matrix Mean		-.044	.067			
|Matrix Mean|		.453	.046			
Maximum Dev		-.272	1.326			
|Maximum Dev|		1.340	.191			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	34/23	01/41	03/41	00/41	01/40	01/41
2	00/41	34/23	-01/40	00/41	00/42	-01/40
3	-01/41	00/41	33/23	01/41	-01/42	00/40
4	00/41	01/40	-01/42	34/23	00/40	-01/41
5	-01/41	-01/41	00/42	-01/40	33/22	02/41
6	01/41	01/41	-01/39	-01/41	-01/42	34/23
Matrix Mean		.083	.062			
|Matrix Mean|		.430	.048			
Maximum Dev		.060	1.218			
|Maximum Dev|		1.206	.177			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	34/22	01/41	03/42	00/41	01/40	01/41
2	-01/41	35/23	-01/40	00/41	00/42	-01/40
3	-01/41	00/41	34/23	02/41	-01/42	00/40
4	00/41	01/40	-01/42	34/23	00/40	-01/41
5	-01/41	-01/41	01/42	-01/40	33/22	02/42
6	00/41	01/42	-01/39	-01/41	-01/42	34/23
Matrix Mean		.082	.062			
|Matrix Mean|		.430	.048			
Maximum Dev		.064	1.222			
|Maximum Dev|		1.209	.179			

Table C14: Descriptive Statistics for 1,000 Samples from Population Matrix #1 ($\underline{v}$=8 [4+4], $\underline{n}$=40*$\underline{v}$)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	-01/51	-04/50	-02/51	00/49
2	00/49	-01/50	-02/50	-03/52
3	-02/50	02/51	00/49	00/50
4	00/51	02/50	00/50	-01/50
Matrix Mean		-.029	.124	
|Matrix Mean|		.570	.086	
Maximum Dev		-.158	1.410	
|Maximum Dev|		1.403	.203	

Structure Coefficients

	I	II	III	IV
Row 1	-01/50	-04/49	-02/51	00/49
2	00/49	-01/50	-02/50	-03/52
3	-02/50	02/51	00/49	00/49
4	00/51	02/49	00/50	-01/50
Matrix Mean		-.030	.124	
|Matrix Mean|		.569	.086	
Maximum Dev		-.140	1.408	
|Maximum Dev|		1.400	.203	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	43/26	-01/50	-02/50	01/50
2	00/49	44/27	02/50	-01/49
3	01/50	-02/50	42/26	02/51
4	01/51	01/48	-02/50	43/27
Matrix Mean		-.006	.102	
|Matrix Mean|		.469	.086	
Maximum Dev		.021	1.378	
|Maximum Dev|		1.361	.213	

Function Coefficients

	I	II	III	IV
Row 1	43/26	-01/50	-02/50	01/50
2	00/49	44/27	02/50	-01/49
3	01/50	-02/50	43/26	02/51
4	01/51	01/48	-02/50	43/27
Matrix Mean		-.006	.102	
|Matrix Mean|		.469	.087	
Maximum Dev		.001	1.381	
|Maximum Dev|		1.363	.212	

Table C15: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (v=6 [4+2], n=40*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	00/51	-01/50
2	-01/49	-01/51
3	-01/50	01/50
4	01/51	01/50
Matrix Mean	-.207	.179
|Matrix Mean|	.472	.136
Maximum Dev	-.316	1.231
|Maximum Dev|	1.242	.266

Structure Coefficients

	I	II
Row 1	00/51	-01/50
2	-02/49	-01/51
3	-01/49	01/50
4	01/50	01/49
Matrix Mean	-.208	.177
|Matrix Mean|	.470	.135
Maximum Dev	-.314	1.225
|Maximum Dev|	1.236	.265

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	65/31	02/69
2	-01/69	65/31
Matrix Mean	-.221	.166
|Matrix Mean|	.504	.338
Maximum Dev	-.138	1.246
|Maximum Dev|	1.084	.629

Function Coefficients

	I	II
Row 1	66/31	02/69
2	-01/69	66/30
Matrix Mean	-.222	.165
|Matrix Mean|	.504	.338
Maximum Dev	-.187	1.241
|Maximum Dev|	1.085	.630

Table C16: Descriptive Statistics for 1,000 Samples from Population Matrix #1 (y=12 [10+2], n=40*y)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-01/32	02/33
2	00/32	00/31
3	00/32	-01/32
4	00/32	00/32
5	-01/32	-02/32
6	01/31	01/31
7	02/32	00/32
8	-02/32	00/32
9	-01/32	00/32
10	02/32	01/31
Matrix Mean	-.086	.075
|Matrix Mean|	.351	.047
Maximum Dev	-.781	.680
|Maximum Dev|	1.015	.206

Structure Coefficients

	I	II
Row 1	-01/32	02/32
2	00/31	00/31
3	00/32	-01/32
4	00/31	00/31
5	-01/32	-02/31
6	01/31	01/31
7	02/32	00/31
8	-02/31	01/32
9	00/31	-01/32
10	02/32	01/31
Matrix Mean	-.086	.073
|Matrix Mean|	.349	.047
Maximum Dev	-.777	.681
|Maximum Dev|	1.012	.207

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	64/31	03/70
2	-03/70	64/31
Matrix Mean	-.165	.157
|Matrix Mean|	.479	.344
Maximum Dev	-.088	1.177
|Maximum Dev|	.988	.645

Function Coefficients

	I	II
Row 1	64/31	03/70
2	-03/70	64/31
Matrix Mean	-.165	.157
|Matrix Mean|	.479	.345
Maximum Dev	-.122	1.174
|Maximum Dev|	.988	.645

Table C17: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [6+6], n=3*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	-05/72	00/44	-01/37	00/34	-06/33	01/32
2	-05/69	00/45	00/38	-01/35	08/34	-02/32
3	00/10	-01/44	01/48	10/50	-02/49	01/50
4	00/10	02/44	12/44	-02/49	00/50	00/51
5	00/10	09/43	-01/49	01/49	01/51	00/49
6	01/11	03/43	01/48	02/49	00/51	-01/50
Matrix Mean		-.053	.072			
|Matrix Mean|		.402	.044			
Maximum Dev		-.333	1.538			
|Maximum Dev|		1.556	.227			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	-04/70	-01/41	00/34	01/28	-06/26	02/26
2	-04/68	01/42	01/34	-01/30	07/28	-02/27
3	00/19	-01/40	01/43	09/45	-02/44	00/45
4	00/19	01/41	11/40	-01/45	00/45	00/46
5	00/19	10/40	00/44	01/44	00/45	00/45
6	02/20	02/40	01/44	01/44	00/46	-02/46
Matrix Mean		-.053	.067			
|Matrix Mean|		.384	.041			
Maximum Dev		-.412	1.471			
|Maximum Dev|		1.513	.206			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	07/17	-02/41	-01/43	00/45	02/45	-01/45
2	01/20	31/26	-02/43	02/44	00/45	-03/46
3	00/18	01/42	36/27	01/44	00/44	-03/44
4	-01/19	-02/41	-01/44	36/26	01/45	-01/45
5	-04/69	01/41	00/34	01/30	22/19	-16/21
6	-04/70	-02/40	01/33	00/29	-19/20	17/19
Matrix Mean		-.072	.066			
|Matrix Mean|		.409	.056			
Maximum Dev		-.424	1.449			
|Maximum Dev|		1.493	.220			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	08/06	-02/44	00/47	-01/50	02/50	-01/50
2	00/11	36/25	-02/46	01/50	00/50	-04/52
3	00/10	02/44	41/26	01/49	01/49	-03/50
4	00/10	-02/45	00/48	41/27	00/50	-02/50
5	-04/69	01/44	-01/38	01/35	29/19	-17/28
6	-05/71	-02/43	00/38	00/35	-20/28	27/19
Matrix Mean		-.080	.070			
|Matrix Mean|		.428	.059			
Maximum Dev		-.354	1.518			
|Maximum Dev|		1.539	.241			

Table C18: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=8 [4+4], n=3*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	-01/72	00/51	-15/41	04/42
2	00/70	00/53	17/42	-05/41
3	00/13	13/54	00/64	01/66
4	02/13	02/55	-03/64	-02/66
Matrix Mean		-.122	.133	
|Matrix Mean|		.451	.100	
Maximum Dev		-.457	1.531	
|Maximum Dev|		1.567	.307	

Structure Coefficients

	I	II	III	IV
Row 1	-01/71	00/48	-15/35	04/35
2	-01/69	00/50	16/36	-04/35
3	00/23	13/50	00/57	00/59
4	04/23	01/51	-03/57	-01/60
Matrix Mean		-.122	.124	
|Matrix Mean|		.433	.095	
Maximum Dev		-.523	1.446	
|Maximum Dev|		1.509	.294	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	09/21	00/51	00/58	00/59
2	01/25	41/31	-02/56	00/60
3	-01/70	01/48	30/26	-22/26
4	-01/71	-01/47	-28/28	24/24
Matrix Mean		-.145	.124	
|Matrix Mean|		.511	.125	
Maximum Dev		-.495	1.455	
|Maximum Dev|		1.508	.296	

Function Coefficients

	I	II	III	IV
Row 1	10/08	-01/56	00/63	00/66
2	01/12	47/30	-03/63	00/67
3	00/70	01/53	39/25	-25/35
4	00/71	-01/52	-28/36	34/23
Matrix Mean		-.159	.129	
|Matrix Mean|		.533	.129	
Maximum Dev		-.403	1.549	
|Maximum Dev|		1.568	.315	

Table C19: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (*v*=6 [4+2], *n*=3**v*)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	70/18	42/38	
2	69/17	-41/41	
3	00/15	02/55	
4	-01/14	02/55	
Matrix Mean		-.006	.114
|Matrix Mean|		.251	.118
Maximum Dev		-.049	.767
|Maximum Dev|		.699	.319

Structure Coefficients

	I	II	
Row 1	68/18	40/31	
2	67/17	-40/32	
3	01/26	02/48	
4	00/25	03/48	
Matrix Mean		-.003	.105
|Matrix Mean|		.257	.101
Maximum Dev		-.032	.690
|Maximum Dev|		.646	.244

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	68/18	-68/20	
2	69/19	68/17	
Matrix Mean		.009	.084
|Matrix Mean|		.107	.096
Maximum Dev		.110	.255
|Maximum Dev|		.219	.171

Function Coefficients

	I	II	
Row 1	70/17	-71/22	
2	71/19	70/19	
Matrix Mean		-.002	.089
|Matrix Mean|		.108	.098
Maximum Dev		.028	.282
|Maximum Dev|		.220	.177

Table C20: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [10+2], n=3*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	70/12	36/25
2	68/12	-37/26
3	00/10	-01/34
4	00/10	00/35
5	00/09	-01/34
6	00/09	00/34
7	00/10	00/35
8	00/10	01/34
9	00/10	03/35
10	00/10	-01/34
Matrix Mean	.000	.048
|Matrix Mean|	.183	.044
Maximum Dev	-.032	.667
|Maximum Dev|	.644	.173

Structure Coefficients

	I	II
Row 1	69/11	36/18
2	67/12	-37/19
3	00/18	-01/29
4	00/18	00/30
5	00/17	-01/30
6	00/18	01/29
7	00/18	00/30
8	01/19	00/29
9	00/17	02/30
10	01/18	-01/28
Matrix Mean	.000	.051
|Matrix Mean|	.193	.034
Maximum Dev	-.022	.568
|Maximum Dev|	.554	.128

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	70/12	-70/11
2	71/11	68/11
Matrix Mean	.002	.056
|Matrix Mean|	.066	.048
Maximum Dev	.069	.142
|Maximum Dev|	.134	.083

Function Coefficients

	I	II
Row 1	69/11	-72/11
2	71/11	71/12
Matrix Mean	.003	.055
|Matrix Mean|	.069	.050
Maximum Dev	.030	.153
|Maximum Dev|	.133	.081

Table C21: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [6+6], n=10*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	-03/72	02/53	01/30	-01/25	-06/21	02/21
2	-03/69	-02/55	-02/32	00/25	06/21	-02/22
3	00/05	00/33	00/45	20/44	02/50	00/49
4	00/04	-01/33	23/39	-01/50	-01/49	01/49
5	00/04	12/30	-01/47	-02/47	00/49	02/51
6	00/04	00/34	-02/48	00/48	00/48	-03/48
Matrix Mean		-.058	.067			
|Matrix Mean|		.361	.048			
Maximum Dev		-.299	1.537			
|Maximum Dev|		1.550	.216			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	-03/72	01/52	02/29	00/23	-06/18	02/19
2	-03/69	-01/55	-02/30	00/23	06/19	-02/20
3	00/10	00/33	00/44	21/42	02/49	00/47
4	00/10	-01/33	23/38	-01/49	00/47	01/48
5	00/10	13/30	-02/46	-02/46	00/48	02/49
6	01/10	00/34	-02/47	00/46	01/47	-03/46
Matrix Mean		-.059	.066			
|Matrix Mean|		.359	.047			
Maximum Dev		-.323	1.515			
|Maximum Dev|		1.534	.210			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	03/09	00/33	-04/46	-01/45	00/48	00/49
2	00/10	26/21	-01/45	00/46	00/48	-02/48
3	00/10	00/34	37/25	00/49	00/46	00/46
4	00/10	-01/32	-01/45	40/26	-02/48	00/47
5	-04/70	-02/54	-03/30	00/23	15/13	-13/14
6	-03/72	02/52	02/29	00/23	-14/14	13/13
Matrix Mean		-.069	.062			
|Matrix Mean|		.388	.062			
Maximum Dev		-.284	1.509			
|Maximum Dev|		1.519	.224			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	04/03	00/33	-04/46	-01/47	-01/49	-01/50
2	00/04	26/20	-02/46	00/47	00/49	-03/50
3	00/05	00/34	39/25	00/50	00/48	00/48
4	00/04	00/33	00/46	42/26	-02/50	00/49
5	-03/69	-03/55	-03/32	00/25	18/13	-13/16
6	-03/71	02/53	03/31	00/25	-14/17	17/12
Matrix Mean		-.071	.062			
|Matrix Mean|		.391	.062			
Maximum Dev		-.235	1.534			
|Maximum Dev|		1.535	.227			

Table C22: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=8 [4+4], n=10*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	02/72	-03/58	-16/28	05/27
2	02/70	03/60	18/28	-04/28
3	00/06	17/36	-04/65	-01/67
4	01/05	00/41	-03/64	01/68
Matrix Mean		-.125	.124	
|Matrix Mean|		.403	.113	
Maximum Dev		-.459	1.527	
|Maximum Dev|		1.562	.316	

Structure Coefficients

	I	II	III	IV
Row 1	02/72	-02/58	-16/26	04/24
2	02/69	03/60	16/27	-04/25
3	00/12	17/36	-04/63	00/65
4	01/12	00/41	-03/62	01/66
Matrix Mean		-.125	.123	
|Matrix Mean|		.401	.112	
Maximum Dev		-.444	1.515	
|Maximum Dev|		1.547	.312	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	05/12	00/42	-02/62	00/64
2	00/12	32/25	-04/63	00/65
3	02/70	03/58	24/20	-19/19
4	01/72	-03/57	-23/20	19/17
Matrix Mean		-.137	.125	
|Matrix Mean|		.487	.144	
Maximum Dev		-.428	1.501	
|Maximum Dev|		1.523	.335	

Function Coefficients

	I	II	III	IV
Row 1	04/03	01/42	-02/65	00/67
2	00/06	33/24	-04/65	00/67
3	02/70	03/59	28/20	-19/23
4	01/71	-03/58	-24/24	24/17
Matrix Mean		-.142	.125	
|Matrix Mean|		.493	.145	
Maximum Dev		-.390	1.526	
|Maximum Dev|		1.536	.342	

Table C23: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=6 [4+2], n=10*v)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	72/08	58/16	
2	69/09	-61/17	
3	00/06	-03/36	
4	00/06	01/38	
Matrix Mean	.005		.072
|Matrix Mean|	.132		.067
Maximum Dev	.020		.482
|Maximum Dev|	.431		.217

Structure Coefficients

	I	II	
Row 1	72/08	57/16	
2	68/08	-60/16	
3	00/14	-03/36	
4	-01/14	00/38	
Matrix Mean	.006		.075
|Matrix Mean|	.148		.066
Maximum Dev	.011		.486
|Maximum Dev|	.443		.201

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	69/09	-71/08	
2	72/08	68/08	
Matrix Mean	.004		.042
|Matrix Mean|	.051		.038
Maximum Dev	.054		.102
|Maximum Dev|	.099		.059

Function Coefficients

	I	II	
Row 1	69/08	-72/08	
2	72/08	70/09	
Matrix Mean	.003		.042
|Matrix Mean|	.052		.038
Maximum Dev	.018		.113
|Maximum Dev|	.098		.058

Table C24: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [10+2], n=10*v)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	72/06	52/12	
2	69/06	-55/12	
3	00/04	01/23	
4	00/04	01/24	
5	00/04	00/25	
6	00/04	01/23	
7	00/04	-02/24	
8	00/04	-01/23	
9	00/05	01/23	
10	00/04	-01/24	
Matrix Mean		.001	.032
|Matrix Mean|		.110	.028
Maximum Dev		-.012	.441
|Maximum Dev|		.424	.121

Structure Coefficients

	I	II	
Row 1	71/06	52/10	
2	68/06	-55/11	
3	00/10	00/23	
4	00/10	00/23	
5	00/10	00/25	
6	00/10	00/23	
7	00/10	-02/23	
8	00/10	00/24	
9	00/10	00/23	
10	00/10	-01/23	
Matrix Mean		.001	.037
|Matrix Mean|		.127	.028
Maximum Dev		-.002	.439
|Maximum Dev|		.424	.112

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	70/06	-71/06	
2	72/05	69/06	
Matrix Mean		.001	.029
|Matrix Mean|		.034	.025
Maximum Dev		.031	.069
|Maximum Dev|		.066	.038

Function Coefficients

	I	II	
Row 1	70/06	-72/06	
2	71/06	70/06	
Matrix Mean		.001	.028
|Matrix Mean|		.034	.025
Maximum Dev		.012	.074
|Maximum Dev|		.065	.037

Table C25: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [6+6], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	00/72	00/62	00/20	00/16	-05/14	03/13
2	00/69	00/65	00/21	01/17	05/15	-03/14
3	00/03	01/22	00/49	31/39	00/48	01/50
4	00/03	00/22	35/35	02/49	03/50	-01/48
5	00/03	10/20	-02/48	00/50	00/49	01/50
6	00/03	00/21	00/46	-01/49	-01/50	02/51
Matrix Mean		-.069	.066			
|Matrix Mean|		.334	.052			
Maximum Dev		-.402	1.514			
|Maximum Dev|		1.551	.210			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	00/72	00/62	00/19	00/15	-05/13	03/12
2	00/69	00/65	00/20	00/15	05/13	-03/12
3	00/06	01/23	-01/49	31/38	00/47	01/49
4	00/06	00/22	35/35	02/48	03/49	-01/47
5	00/06	10/21	-02/47	00/49	00/48	00/49
6	01/06	00/22	00/46	00/48	00/50	02/50
Matrix Mean		-.068	.066			
|Matrix Mean|		.334	.051			
Maximum Dev		-.440	1.497			
|Maximum Dev|		1.545	.210			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	02/06	-01/22	-01/47	00/49	-02/49	00/50
2	00/06	16/14	-03/48	00/48	01/50	-04/49
3	00/06	00/23	42/26	02/48	03/49	02/47
4	00/06	01/24	-01/48	42/26	-01/47	02/49
5	00/70	00/64	00/20	00/15	10/10	-09/10
6	00/72	00/63	00/19	00/15	-10/10	09/09
Matrix Mean		-.073	.065			
|Matrix Mean|		.369	.066			
Maximum Dev		-.311	1.518			
|Maximum Dev|		1.533	.219			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	02/02	-01/22	-01/47	00/50	-02/50	00/51
2	00/03	16/13	-03/48	00/48	01/50	-04/50
3	00/02	00/22	42/26	02/49	03/50	02/48
4	00/03	01/23	00/49	43/26	-01/48	02/50
5	00/70	00/64	00/21	00/16	12/09	-09/11
6	00/71	00/63	00/20	00/16	-10/12	11/08
Matrix Mean		-.074	.066			
|Matrix Mean|		.370	.066			
Maximum Dev		-.281	1.529			
|Maximum Dev|		1.538	.220			

Table C26: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=8 [4+4], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	00/72	03/64	-11/20	04/17
2	00/69	-03/67	12/20	-05/18
3	00/03	12/26	02/68	00/69
4	00/03	00/26	-02/67	03/70
Matrix Mean		-.123	.128	
|Matrix Mean|		.356	.128	
Maximum Dev		-.549	1.486	
|Maximum Dev|		1.543	.354	

Structure Coefficients

	I	II	III	IV
Row 1	00/72	03/64	-11/19	04/16
2	00/69	-03/66	12/19	-04/16
3	00/08	13/25	01/67	00/68
4	01/08	00/27	-02/67	03/69
Matrix Mean		-.123	.127	
|Matrix Mean|		.357	.128	
Maximum Dev		-.495	1.499	
|Maximum Dev|		1.538	.353	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	02/07	00/28	-02/68	04/67
2	00/08	22/18	01/66	00/69
3	00/70	-03/66	17/15	-12/12
4	00/72	03/64	-16/15	12/11
Matrix Mean		-.130	.126	
|Matrix Mean|		.447	.150	
Maximum Dev		-.467	1.507	
|Maximum Dev|		1.539	.347	

Function Coefficients

	I	II	III	IV
Row 1	03/02	00/28	-02/68	04/68
2	00/03	22/17	01/66	00/70
3	00/70	-03/66	19/15	-12/14
4	00/71	03/64	-17/16	14/11
Matrix Mean		-.132	.127	
|Matrix Mean|		.448	.150	
Maximum Dev		-.469	1.512	
|Maximum Dev|		1.544	.350	

Table C27: Descriptive Statistics for 1,000 Samples from Population Matrix #2 ($\underline{v}$=6 [4+2], $\underline{n}$=25*$\underline{v}$)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	72/05	65/08	
2	69/05	-67/08	
3	00/04	-01/26	
4	00/04	02/25	
Matrix Mean	-.002		.046
|Matrix Mean|	.080		.038
Maximum Dev	-.009		.322
|Maximum Dev|	.285		.150

Structure Coefficients

	I	II	
Row 1	72/05	65/07	
2	69/06	-67/08	
3	01/09	00/26	
4	00/09	01/26	
Matrix Mean	-.001		.049
|Matrix Mean|	.092		.039
Maximum Dev	-.002		.332
|Maximum Dev|	.297		.148

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	70/05	-71/05	
2	72/05	69/05	
Matrix Mean	.001		.027
|Matrix Mean|	.030		.022
Maximum Dev	.027		.063
|Maximum Dev|	.059		.035

Function Coefficients

	I	II	
Row 1	70/05	-72/05	
2	71/05	70/05	
Matrix Mean	.000		.025
|Matrix Mean|	.031		.023
Maximum Dev	.011		.067
|Maximum Dev|	.058		.034

Table C28: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [10+2], n=25*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	72/04	61/06
2	69/04	-64/06
3	00/03	00/17
4	00/03	00/16
5	00/03	-01/16
6	00/03	00/16
7	00/03	00/16
8	00/03	00/16
9	00/03	00/16
10	00/03	00/16
Matrix Mean	.001	.023
|Matrix Mean|	.071	.018
Maximum Dev	.007	.303
|Maximum Dev|	.291	.086

Structure Coefficients

	I	II
Row 1	72/04	62/05
2	69/04	-64/05
3	00/06	00/17
4	00/06	00/16
5	00/06	-01/17
6	00/06	00/17
7	00/06	00/17
8	00/06	00/17
9	00/06	00/16
10	00/06	00/17
Matrix Mean	.001	.028
|Matrix Mean|	.083	.018
Maximum Dev	.010	.311
|Maximum Dev|	.299	.086

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	70/04	-71/04
2	72/03	69/04
Matrix Mean	.001	.018
|Matrix Mean|	.021	.015
Maximum Dev	.018	.042
|Maximum Dev|	.040	.023

Function Coefficients

	I	II
Row 1	69/04	-72/03
2	71/04	70/04
Matrix Mean	.001	.017
|Matrix Mean|	.022	.015
Maximum Dev	.010	.045
|Maximum Dev|	.040	.022

Table C29: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [6+6], n=40*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	-01/72	00/65	00/15	00/12	-04/10	02/11
2	-01/69	00/68	00/16	-01/13	04/11	-03/11
3	00/02	00/17	-04/51	38/33	02/49	-02/46
4	00/02	00/16	39/32	01/49	-02/49	-01/50
5	00/02	06/16	-04/46	-02/49	01/50	-02/52
6	00/02	00/16	-02/48	01/49	02/50	-02/50
Matrix Mean		-.065	.065			
|Matrix Mean|		.319	.054			
Maximum Dev		-.426	1.507			
|Maximum Dev|		1.551	.214			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	-01/72	00/65	00/14	00/12	-03/10	02/10
2	-01/69	00/68	00/15	00/12	03/10	-02/10
3	00/05	00/17	-04/51	38/33	02/49	-02/46
4	00/05	00/17	39/32	01/49	-03/48	-01/49
5	00/05	07/16	-04/46	-02/49	01/50	-02/52
6	00/05	00/17	-02/48	01/49	02/50	-02/50
Matrix Mean		-.065	.065			
|Matrix Mean|		.319	.054			
Maximum Dev		-.443	1.499			
|Maximum Dev|		1.548	.212			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	02/04	-01/17	-01/47	02/48	03/51	-02/50
2	00/05	13/11	-04/47	00/50	01/49	-03/50
3	00/04	00/18	44/26	02/49	-04/46	-02/49
4	00/05	00/18	-04/50	41/26	02/50	-01/47
5	-01/70	00/67	00/15	00/12	08/08	-07/07
6	-01/72	00/65	00/14	00/12	-07/08	07/07
Matrix Mean		-.070	.064			
|Matrix Mean|		.355	.067			
Maximum Dev		-.340	1.513			
|Maximum Dev|		1.535	.220			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	02/01	-01/17	-02/47	02/48	03/52	-02/51
2	00/02	13/10	-03/47	00/50	01/50	-03/51
3	00/02	00/17	44/26	02/50	-04/47	-02/50
4	00/02	00/17	-03/50	42/26	02/50	-01/48
5	-01/69	00/68	00/16	00/13	09/07	-07/08
6	-01/71	00/66	00/16	00/13	-07/08	09/07
Matrix Mean		-.070	.064			
|Matrix Mean|		.355	.067			
Maximum Dev		-.320	1.521			
|Maximum Dev|		1.538	.220			

Table C30: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=8 [4+4], n=40*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	01/72	00/66	-08/14	04/13
2	02/69	00/69	08/15	-04/14
3	00/03	09/19	-03/69	00/69
4	00/02	00/20	-01/69	-02/70
Matrix Mean		-.118	.124	
|Matrix Mean|		.344	.132	
Maximum Dev		-.492	1.505	
|Maximum Dev|		1.537	.376	

Structure Coefficients

	I	II	III	IV
Row 1	01/72	00/66	-08/13	04/12
2	01/69	00/69	08/14	-04/13
3	00/06	09/19	-03/69	00/69
4	00/06	00/21	00/68	-02/70
Matrix Mean		-.118	.123	
|Matrix Mean|		.345	.131	
Maximum Dev		-.404	1.526	
|Maximum Dev|		1.533	.375	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	02/05	00/22	-02/68	-04/69
2	00/06	17/14	-02/69	00/69
3	02/70	01/68	12/11	-10/10
4	01/72	00/66	-12/11	10/09
Matrix Mean		-.123	.124	
|Matrix Mean|		.432	.156	
Maximum Dev		-.386	1.525	
|Maximum Dev|		1.524	.388	

Function Coefficients

	I	II	III	IV
Row 1	02/02	00/21	-02/69	-04/70
2	00/02	17/13	-02/69	00/69
3	02/70	00/68	14/11	-10/12
4	01/71	00/67	-12/12	12/09
Matrix Mean		-.124	.124	
|Matrix Mean|		.433	.157	
Maximum Dev		-.398	1.525	
|Maximum Dev|		1.526	.390	

Table C31: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=6 [4+2], n=40*v)

Larger Variable Set
Function Coefficients

		I	II
Row	1	72/04	67/05
	2	69/04	-70/05
	3	00/03	-01/19
	4	00/03	-01/18
Matrix Mean		.003	.036
|Matrix Mean|		.058	.026
Maximum Dev		.028	.239
|Maximum Dev|		.212	.114

Structure Coefficients

		I	II
Row	1	72/04	66/05
	2	69/04	-70/05
	3	00/07	-01/20
	4	00/07	-01/19
Matrix Mean		.003	.038
|Matrix Mean|		.067	.027
Maximum Dev		.020	.248
|Maximum Dev|		.222	.113

Smaller Variable Set
Structure Coefficients

		I	II
Row	1	70/04	-71/04
	2	72/04	69/04
Matrix Mean		.000	.021
|Matrix Mean|		.024	.018
Maximum Dev		.021	.049
|Maximum Dev|		.046	.026

Function Coefficients

		I	II
Row	1	70/04	-72/04
	2	71/04	70/04
Matrix Mean		.001	.020
|Matrix Mean|		.025	.018
Maximum Dev		.009	.052
|Maximum Dev|		.046	.025

Table C32: Descriptive Statistics for 1,000 Samples from Population Matrix #2 (v=12 [10+2], n=40*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	72/03	64/04
2	69/03	-67/04
3	00/02	00/13
4	00/02	00/13
5	00/02	00/13
6	00/02	01/13
7	00/02	00/14
8	00/02	00/13
9	00/02	00/13
10	00/02	-01/13
Matrix Mean	.000	.017
|Matrix Mean|	.055	.014
Maximum Dev	.007	.245
|Maximum Dev|	.235	.069

Structure Coefficients

	I	II
Row 1	72/03	64/04
2	69/03	-67/04
3	00/05	00/13
4	00/04	00/14
5	00/05	00/14
6	00/05	01/13
7	00/05	00/14
8	00/05	00/14
9	00/04	00/14
10	00/05	-01/13
Matrix Mean	.000	.021
|Matrix Mean|	.065	.015
Maximum Dev	.003	.254
|Maximum Dev|	.244	.072

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	70/03	-71/03
2	72/03	70/03
Matrix Mean	-.001	.014
|Matrix Mean|	.016	.011
Maximum Dev	.011	.034
|Maximum Dev|	.031	.017

Function Coefficients

	I	II
Row 1	70/03	-72/03
2	71/03	70/03
Matrix Mean	.000	.013
|Matrix Mean|	.016	.011
Maximum Dev	.005	.035
|Maximum Dev|	.031	.017

Table C33: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [6+6], n=3*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	05/92	-04/58	-04/47	-04/42	-03/39	04/39
2	02/42	07/61	06/60	-04/56	09/56	-03/56
3	02/31	09/45	04/49	06/52	-02/53	-01/51
4	03/27	05/41	03/46	04/49	00/50	-01/51
5	04/28	06/43	05/48	05/47	-01/49	-01/49
6	03/28	08/43	02/46	03/48	-01/49	04/50
Matrix Mean		.060	.052			
|Matrix Mean|		.501	.069			
Maximum Dev		.589	1.695			
|Maximum Dev|		1.755	.368			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	08/78	05/38	02/29	-02/25	01/22	00/22
2	08/44	09/43	05/42	-03/38	06/37	-02/37
3	06/32	10/41	05/41	04/43	00/42	-01/42
4	07/30	07/40	04/42	04/43	-01/43	-01/44
5	05/32	09/41	05/42	05/42	00/43	-02/42
6	06/31	10/41	04/42	03/42	-01/43	03/43
Matrix Mean		.104	.082			
|Matrix Mean|		.426	.064			
Maximum Dev		.790	1.250			
|Maximum Dev|		1.448	.296			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	21/24	05/42	03/42	00/42	00/42	-02/43
2	03/31	30/27	-02/42	-01/43	-03/44	-01/42
3	03/32	05/40	31/27	00/43	-05/42	-03/44
4	03/32	06/43	01/43	33/27	-02/42	-02/41
5	06/45	06/44	00/41	00/39	26/26	-12/35
6	07/77	02/40	00/29	03/24	04/22	06/21
Matrix Mean		.098	.086			
|Matrix Mean|		.408	.062			
Maximum Dev		.749	1.289			
|Maximum Dev|		1.459	.307			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	22/17	00/42	00/48	-02/48	-02/49	-02/51
2	00/29	34/25	-04/46	-04/48	-05/51	-02/49
3	00/29	03/42	37/26	-03/49	-07/49	-04/51
4	-01/32	02/46	-01/50	44/28	-08/51	-01/50
5	02/43	04/60	-10/61	-11/58	47/32	-30/50
6	03/93	-06/57	-02/48	-02/42	-21/35	32/24
Matrix Mean		.049	.052			
|Matrix Mean|		.478	.065			
Maximum Dev		.648	1.694			
|Maximum Dev|		1.774	.375			

Table C34: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=8 [4+4], n=3*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	10/96	-04/63	-11/51	05/50
2	00/48	00/76	22/70	-07/72
3	03/36	12/56	-02/66	-02/65
4	04/34	10/53	-01/60	-01/64
Matrix Mean		.052	.101	
|Matrix Mean|		.596	.129	
Maximum Dev		1.189	1.426	
|Maximum Dev|		1.805	.436	

Structure Coefficients

	I	II	III	IV
Row 1	11/80	00/41	02/32	00/27
2	07/48	02/54	15/48	-04/46
3	06/35	11/50	01/56	-02/55
4	06/36	11/51	00/53	00/57
Matrix Mean		.138	.159	
|Matrix Mean|		.492	.112	
Maximum Dev		.816	1.278	
|Maximum Dev|		1.480	.329	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	23/28	04/52	-04/54	01/55
2	02/36	38/34	00/54	-02/57
3	05/50	05/54	35/33	-16/43
4	09/81	04/41	04/30	08/26
Matrix Mean		.115	.164	
|Matrix Mean|		.466	.123	
Maximum Dev		.797	1.319	
|Maximum Dev|		1.501	.346	

Function Coefficients

	I	II	III	IV
Row 1	27/20	-01/56	-08/61	00/62
2	-03/36	48/31	-10/64	-03/68
3	-02/49	-05/76	65/39	-40/61
4	09/97	-08/63	-31/44	41/32
Matrix Mean		.025	.101	
|Matrix Mean|		.557	.138	
Maximum Dev		1.204	1.445	
|Maximum Dev|		1.825	.452	

Table C35: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=6 [4+2], n=3*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-44/86	33/57
2	25/46	-31/75
3	06/38	-08/58
4	00/34	-06/55
Matrix Mean	-.189	.157
|Matrix Mean|	.319	.182
Maximum Dev	-1.158	1.005
|Maximum Dev|	1.402	.621

Structure Coefficients

	I	II
Row 1	-28/76	11/38
2	01/50	-15/55
3	01/38	-08/49
4	00/37	-06/50
Matrix Mean	-.360	.268
|Matrix Mean|	.313	.145
Maximum Dev	-1.114	.736
|Maximum Dev|	1.227	.527

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	15/55	-39/72
2	-28/84	12/46
Matrix Mean	-.528	.501
|Matrix Mean|	.278	.227
Maximum Dev	-.971	.962
|Maximum Dev|	1.088	.828

Function Coefficients

	I	II
Row 1	50/35	-82/83
2	-58/88	66/43
Matrix Mean	-.329	.314
|Matrix Mean|	.332	.254
Maximum Dev	-1.034	.928
|Maximum Dev|	1.140	.794

Table C36: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (y=12 [10+2], n=3*y)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-31/82	39/39
2	16/31	-41/44
3	05/26	-05/34
4	00/22	-05/32
5	01/22	-03/34
6	01/20	-02/33
7	-01/22	-02/34
8	01/21	-02/34
9	01/22	-02/33
10	-01/36	-17/37
Matrix Mean	-.096	.073
|Matrix Mean|	.223	.065
Maximum Dev	-.878	.922
|Maximum Dev|	1.160	.523

Structure Coefficients

	I	II
Row 1	-20/73	10/29
2	02/41	-22/34
3	00/26	-08/29
4	00/25	-09/28
5	00/26	-07/30
6	00/25	-06/29
7	-01/26	-07/30
8	00/25	-06/30
9	00/26	-06/30
10	00/41	-19/34
Matrix Mean	-.211	.159
|Matrix Mean|	.235	.068
Maximum Dev	-.946	.662
|Maximum Dev|	1.036	.510

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	11/58	-60/54
2	-22/90	05/37
Matrix Mean	-.446	.491
|Matrix Mean|	.187	.175
Maximum Dev	-.876	.974
|Maximum Dev|	.994	.853

Function Coefficients

	I	II
Row 1	37/29	-103/59
2	-44/92	69/36
Matrix Mean	-.270	.308
|Matrix Mean|	.263	.233
Maximum Dev	-.855	.953
|Maximum Dev|	1.008	.790

Table C37: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [6+6], n=10*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	34/102	-25/39	00/31	01/26	-03/23	01/24
2	-04/28	31/59	-08/65	-08/52	11/45	-04/47
3	-03/19	21/34	05/46	08/50	-04/51	00/50
4	04/14	22/31	10/42	01/47	-02/50	-01/50
5	04/14	20/33	09/43	03/48	-02/49	01/50
6	05/13	22/33	07/44	02/47	-02/49	00/49
Matrix Mean		.040	.042			
|Matrix Mean|		.419	.071			
Maximum Dev		.562	1.682			
|Maximum Dev|		1.722	.421			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	33/86	05/20	-01/16	00/16	01/15	00/16
2	17/39	28/45	-04/45	-04/36	07/30	-02/32
3	08/19	29/36	06/40	07/44	-03/44	-01/44
4	08/19	28/34	10/40	02/43	-02/45	-02/45
5	08/20	27/35	09/41	03/44	-02/44	01/44
6	09/19	28/36	08/42	02/43	-02/44	-01/43
Matrix Mean		.067	.073			
|Matrix Mean|		.364	.067			
Maximum Dev		.682	1.313			
|Maximum Dev|		1.440	.338			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	14/16	26/37	01/41	-03/43	-05/45	01/44
2	07/20	38/24	00/40	-01/43	-06/44	-03/46
3	07/20	24/35	34/25	-05/44	-03/45	-01/44
4	08/20	25/38	04/42	35/25	-06/43	03/44
5	16/41	27/45	-06/45	00/36	23/22	-12/27
6	32/87	04/20	-02/17	05/15	04/15	02/15
Matrix Mean		.066	.071			
|Matrix Mean|		.353	.064			
Maximum Dev		.516	1.408			
|Maximum Dev|		1.460	.337			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	11/08	19/35	-01/43	-06/46	-06/50	02/49
2	03/14	33/21	-02/42	-03/47	-06/49	-03/51
3	03/14	17/33	37/25	-07/49	-03/49	-01/49
4	-03/18	17/37	03/48	42/27	-12/49	06/51
5	-05/26	31/59	-10/67	-13/52	38/27	-25/36
6	34/101	-26/41	00/33	02/26	-14/21	18/14
Matrix Mean		.034	.041			
|Matrix Mean|		.404	.068			
Maximum Dev		.413	1.740			
|Maximum Dev|		1.739	.413			

Table C38: Descriptive Statistics for 1,000 Samples from Population Matrix #3 ($\underline{v}$=8 [4+4], $\underline{n}$=10*$\underline{v}$)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	27/107	-08/46	-15/32	04/30
2	-04/32	08/86	41/56	-07/57
3	-02/22	20/45	-14/62	04/69
4	04/16	17/45	-04/61	-02/65
Matrix Mean		.033	.092	
|Matrix Mean|		.487	.150	
Maximum Dev		1.171	1.432	
|Maximum Dev|		1.766	.551	

Structure Coefficients

	I	II	III	IV
Row 1	24/89	04/26	05/19	01/19
2	12/41	11/66	27/38	-04/39
3	05/21	22/46	-06/56	02/61
4	06/21	19/47	-03/58	-02/60
Matrix Mean		.104	.155	
|Matrix Mean|		.418	.134	
Maximum Dev		.819	1.307	
|Maximum Dev|		1.481	.427	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	14/18	13/49	-10/56	-01/60
2	04/22	39/31	-06/58	-01/60
3	11/43	11/64	38/30	-19/34
4	24/90	07/24	07/19	00/19
Matrix Mean		.103	.151	
|Matrix Mean|		.413	.148	
Maximum Dev		.829	1.313	
|Maximum Dev|		1.485	.454	

Function Coefficients

	I	II	III	IV
Row 1	13/10	10/49	-13/59	00/65
2	-04/21	40/27	-16/63	02/69
3	-05/32	04/87	59/36	-34/48
4	26/107	-09/49	-22/28	25/19
Matrix Mean		.026	.090	
|Matrix Mean|		.477	.160	
Maximum Dev		1.300	1.364	
|Maximum Dev|		1.793	.577	

Table C39: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=6 [4+2], n=10*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-78/75	39/33
2	22/26	-79/51
3	09/20	-08/44
4	-02/18	-17/41
Matrix Mean	-.077	.115
|Matrix Mean|	.189	.139
Maximum Dev	-.584	.926
|Maximum Dev|	.874	.659

Structure Coefficients

	I	II
Row 1	-63/67	-11/24
2	-20/38	-59/40
3	-06/22	-22/40
4	-06/23	-21/40
Matrix Mean	-.152	.208
|Matrix Mean|	.187	.110
Maximum Dev	-.545	.799
|Maximum Dev|	.774	.580

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	20/43	-78/40
2	-65/70	-14/25
Matrix Mean	-.183	.359
|Matrix Mean|	.114	.155
Maximum Dev	-.386	.793
|Maximum Dev|	.512	.718

Function Coefficients

	I	II
Row 1	30/21	-112/46
2	-83/74	55/28
Matrix Mean	-.109	.225
|Matrix Mean|	.182	.229
Maximum Dev	-.418	.841
|Maximum Dev|	.585	.734

Table C40: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [10+2], n=10*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-46/86	55/21
2	14/20	-71/25
3	07/18	-03/24
4	-01/11	-06/23
5	00/11	-07/24
6	-01/11	-06/23
7	-01/11	-05/23
8	00/11	-06/23
9	00/11	-05/24
10	-11/33	-38/22
Matrix Mean	-.054	.061
|Matrix Mean|	.127	.040
Maximum Dev	-.644	.903
|Maximum Dev|	.883	.671

Structure Coefficients

	I	II
Row 1	-37/78	05/16
2	-12/39	-46/20
3	-04/18	-15/22
4	-04/18	-14/22
5	-04/19	-15/23
6	-04/18	-14/22
7	-05/18	-14/22
8	-04/18	-14/21
9	-04/18	-14/23
10	-13/40	-43/20
Matrix Mean	-.122	.139
|Matrix Mean|	.151	.045
Maximum Dev	-.657	.780
|Maximum Dev|	.809	.621

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	-13/52	-82/17
2	-41/89	-08/16
Matrix Mean	-.253	.399
|Matrix Mean|	.099	.118
Maximum Dev	-.587	.912
|Maximum Dev|	.671	.852

Function Coefficients

	I	II
Row 1	17/14	-122/19
2	-52/92	66/21
Matrix Mean	-.146	.250
|Matrix Mean|	.197	.235
Maximum Dev	-.563	.935
|Maximum Dev|	.709	.829

Table C41: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [6+6], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	62/91	-42/24	06/24	02/17	-02/15	00/15
2	-11/22	59/38	-31/72	-06/43	10/34	-01/34
3	-07/15	28/20	15/43	03/51	-05/52	02/52
4	04/09	29/20	10/37	03/49	00/51	-01/51
5	04/08	30/20	11/38	03/48	-03/52	02/50
6	05/09	30/20	12/38	-01/50	-05/48	-01/50
Matrix Mean		.024	.031			
|Matrix Mean|		.352	.071			
Maximum Dev		.246	1.660			
|Maximum Dev|		1.624	.422			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	55/78	09/11	-05/14	00/13	01/13	00/13
2	24/33	51/29	-20/48	-04/30	06/24	00/25
3	09/14	41/22	11/36	02/44	-04/45	01/46
4	09/14	40/22	11/36	03/45	-01/46	-01/46
5	10/14	40/22	12/36	03/44	-03/47	02/45
6	10/15	40/22	13/37	-01/46	-05/44	-01/45
Matrix Mean		.040	.055			
|Matrix Mean|		.313	.065			
Maximum Dev		.399	1.348			
|Maximum Dev|		1.368	.322			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	13/12	41/22	06/37	-08/43	-07/46	04/45
2	08/15	42/17	06/39	-08/44	-06/45	00/45
3	09/15	38/22	30/22	-05/46	-07/45	00/46
4	08/15	40/23	07/36	37/24	-06/44	01/47
5	25/35	50/29	-22/48	01/29	19/18	-10/21
6	55/78	08/12	-06/13	06/11	04/12	00/13
Matrix Mean		.041	.055			
|Matrix Mean|		.302	.066			
Maximum Dev		.253	1.393			
|Maximum Dev|		1.374	.341			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	08/06	30/20	04/38	-10/47	-07/51	04/51
2	03/09	32/16	05/40	-10/48	-05/50	00/50
3	03/09	28/21	31/22	-07/50	-06/50	00/51
4	-08/14	27/22	11/45	43/27	-11/50	02/53
5	-11/21	59/38	-33/73	-10/41	30/22	-19/26
6	62/91	-44/24	07/26	02/17	-09/13	12/09
Matrix Mean		.021	.031			
|Matrix Mean|		.339	.072			
Maximum Dev		.110	1.686			
|Maximum Dev|		1.631	.439			

Table C42: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=8 [4+4], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	51/101	-19/42	-11/21	02/20
2	-10/25	36/89	47/42	-06/44
3	-06/17	20/32	-38/57	07/71
4	04/10	23/34	-28/55	-02/69
Matrix Mean		.032	.085	
|Matrix Mean|		.376	.155	
Maximum Dev		.891	1.458	
|Maximum Dev|		1.571	.672	

Structure Coefficients

	I	II	III	IV
Row 1	43/85	10/20	02/14	01/16
2	18/36	32/69	26/30	-03/30
3	06/15	28/37	-29/52	05/63
4	07/15	27/37	-27/53	-02/63
Matrix Mean		.090	.144	
|Matrix Mean|		.330	.140	
Maximum Dev		.670	1.271	
|Maximum Dev|		1.333	.535	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	12/12	23/40	-29/51	02/64
2	06/16	38/30	-31/51	06/62
3	18/38	33/68	32/25	-14/27
4	43/85	10/19	04/13	01/15
Matrix Mean		.090	.148	
|Matrix Mean|		.333	.159	
Maximum Dev		.607	1.312	
|Maximum Dev|		1.321	.587	

Function Coefficients

	I	II	III	IV
Row 1	08/06	19/37	-30/53	02/70
2	-07/16	32/22	-41/54	09/70
3	-11/24	34/90	57/33	-26/37
4	51/101	-21/45	-15/21	16/12
Matrix Mean		.026	.084	
|Matrix Mean|		.376	.170	
Maximum Dev		.925	1.462	
|Maximum Dev|		1.571	.724	

Table C43: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=6 [4+2], n=25*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-100/50	45/20
2	22/16	-100/24
3	13/12	-08/31
4	-05/11	-20/29
Matrix Mean	-.028	.069
|Matrix Mean|	.124	.080
Maximum Dev	-.194	.640
|Maximum Dev|	.483	.463

Structure Coefficients

	I	II
Row 1	-84/45	-18/14
2	-32/25	-79/17
3	-10/15	-27/28
4	-11/14	-26/29
Matrix Mean	-.055	.125
|Matrix Mean|	.118	.055
Maximum Dev	-.186	.575
|Maximum Dev|	.443	.411

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	-34/27	-89/13
2	-86/46	-20/13
Matrix Mean	-.057	.205
|Matrix Mean|	.052	.084
Maximum Dev	-.136	.486
|Maximum Dev|	.227	.451

Function Coefficients

	I	II
Row 1	26/15	-120/15
2	-101/49	52/18
Matrix Mean	-.029	.129
|Matrix Mean|	.092	.149
Maximum Dev	-.112	.537
|Maximum Dev|	.277	.473

Table C44: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [10+2], n=25*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-65/76	65/12
2	14/15	-83/15
3	10/14	-04/17
4	-02/07	-07/16
5	-01/07	-07/16
6	-02/07	-07/16
7	-01/07	-06/17
8	-02/07	-07/16
9	-02/07	-08/17
10	-20/28	-43/14
Matrix Mean	-.030	.051
|Matrix Mean|	.082	.025
Maximum Dev	-.439	.773
|Maximum Dev|	.609	.647

Structure Coefficients

	I	II
Row 1	-57/69	07/10
2	-24/34	-54/13
3	-08/14	-19/16
4	-08/14	-18/16
5	-08/13	-17/16
6	-08/15	-17/16
7	-08/14	-17/16
8	-09/14	-17/16
9	-09/14	-18/17
10	-25/35	-50/13
Matrix Mean	-.069	.118
|Matrix Mean|	.103	.036
Maximum Dev	-.414	.707
|Maximum Dev|	.570	.589

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	-30/45	-84/05
2	-63/77	-08/08
Matrix Mean	-.153	.326
|Matrix Mean|	.062	.094
Maximum Dev	-.364	.776
|Maximum Dev|	.421	.747

Function Coefficients

	I	II
Row 1	11/08	-124/04
2	-70/79	67/12
Matrix Mean	-.084	.204
|Matrix Mean|	.133	.208
Maximum Dev	-.352	.800
|Maximum Dev|	.456	.746

Table C45: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [6+6], n=40*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	76/80	-47/15	13/20	01/13	-03/12	00/12
2	-14/18	66/24	-57/66	-04/34	08/29	00/26
3	-09/12	29/14	25/38	02/52	-04/51	00/53
4	05/07	32/13	16/31	02/50	02/51	-02/54
5	05/07	32/14	15/33	02/51	-03/52	-01/49
6	05/07	34/14	19/31	-01/50	-02/50	02/51
Matrix Mean		.015	.025			
|Matrix Mean|		.315	.066			
Maximum Dev		.160	1.580			
|Maximum Dev|		1.536	.399			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	66/69	09/09	-08/12	00/12	01/12	00/12
2	29/29	56/18	-37/44	-03/24	05/22	00/20
3	11/12	44/14	17/30	01/46	-03/46	00/47
4	11/12	43/14	17/31	02/45	02/46	-01/48
5	11/12	44/14	16/32	02/46	-03/48	-01/44
6	11/12	44/15	20/30	00/46	-01/45	02/46
Matrix Mean		.026	.045			
|Matrix Mean|		.285	.061			
Maximum Dev		.296	1.318			
|Maximum Dev|		1.316	.304			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	13/10	44/14	13/32	-10/44	-05/46	02/47
2	11/12	45/12	16/31	-10/45	-06/45	03/46
3	11/12	43/15	29/19	-10/45	-03/46	00/46
4	11/13	44/14	14/32	39/24	-03/46	00/46
5	30/31	55/18	-38/43	04/23	15/16	-09/18
6	67/69	09/08	-09/11	07/10	03/11	00/11
Matrix Mean		.028	.044			
|Matrix Mean|		.274	.062			
Maximum Dev		.183	1.342			
|Maximum Dev|		1.313	.330			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	07/05	33/14	11/33	-12/48	-05/51	02/52
2	04/07	34/12	14/32	-11/50	-06/50	03/51
3	04/07	32/14	29/19	-11/50	-03/51	-01/52
4	-09/11	28/15	22/40	44/27	-06/52	02/52
5	-14/18	67/24	-59/67	-07/33	24/18	-16/22
6	76/81	-49/16	15/22	02/14	-07/10	10/07
Matrix Mean		.013	.024			
|Matrix Mean|		.303	.067			
Maximum Dev		.023	1.596			
|Maximum Dev|		1.538	.425			

Table C46: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=8 [4+4], n=40*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	59/97	-29/38	-12/18	02/15
2	-11/22	56/80	53/37	-06/37
3	-08/15	21/26	-48/49	03/73
4	04/08	27/28	-37/48	03/70
Matrix Mean		.027	.076	
|Matrix Mean|		.323	.142	
Maximum Dev		.723	1.451	
|Maximum Dev|		1.463	.697	

Structure Coefficients

	I	II	III	IV
Row 1	51/81	12/17	02/12	00/15
2	22/34	48/63	28/26	-03/26
3	07/13	32/32	-39/46	02/64
4	08/13	33/31	-38/46	03/64
Matrix Mean		.076	.131	
|Matrix Mean|		.289	.129	
Maximum Dev		.521	1.270	
|Maximum Dev|		.562	1.252	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	11/11	30/33	-40/45	02/64
2	08/14	38/25	-39/44	07/64
3	22/36	48/62	31/22	-10/23
4	50/82	13/16	03/11	01/14
Matrix Mean		.077	.133	
|Matrix Mean|		.289	.148	
Maximum Dev		.494	1.302	
|Maximum Dev|		1.243	.625	

Function Coefficients

	I	II	III	IV
Row 1	07/05	24/30	-40/47	02/70
2	-08/14	29/19	-48/47	09/73
3	-11/21	56/82	58/30	-21/32
4	59/97	-32/40	-13/18	12/10
Matrix Mean		.022	.076	
|Matrix Mean|		.324	.156	
Maximum Dev		.739	1.482	
|Maximum Dev|		1.468	.766	

Table C47: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=6 [4+2], n=40*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-109/30	48/15
2	23/12	-107/15
3	13/09	-08/25
4	-06/08	-20/23
Matrix Mean	-.013	.045
|Matrix Mean|	.101	.050
Maximum Dev	-.073	.435
|Maximum Dev|	.331	.291

Structure Coefficients

	I	II
Row 1	-92/26	-19/10
2	-37/16	-83/09
3	-12/11	-28/23
4	-13/11	-27/23
Matrix Mean	-.024	.078
|Matrix Mean|	.094	.038
Maximum Dev	-.082	.395
|Maximum Dev|	.308	.260

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	-40/17	-90/05
2	-94/27	-20/09
Matrix Mean	-.019	.116
|Matrix Mean|	.037	.051
Maximum Dev	-.045	.290
|Maximum Dev|	.129	.263

Function Coefficients

	I	II
Row 1	25/11	-122/06
2	-109/29	54/14
Matrix Mean	-.007	.073
|Matrix Mean|	.062	.093
Maximum Dev	-.035	.325
|Maximum Dev|	.169	.280

Table C48: Descriptive Statistics for 1,000 Samples from Population Matrix #3 (v=12 [10+2], n=40*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	-83/57	68/09
2	17/11	-86/12
3	13/11	-03/14
4	-02/05	-08/14
5	-02/05	-07/13
6	-02/05	-07/13
7	-02/05	-06/14
8	-02/06	-07/13
9	-02/06	-07/14
10	-27/21	-46/11
Matrix Mean	-.017	.038
|Matrix Mean|	.068	.017
Maximum Dev	-.236	.598
|Maximum Dev|	.399	.505

Structure Coefficients

	I	II
Row 1	-74/52	07/08
2	-32/26	-56/10
3	-10/10	-18/13
4	-11/11	-18/14
5	-11/10	-18/13
6	-11/11	-18/13
7	-11/10	-17/13
8	-11/11	-18/12
9	-11/11	-18/13
10	-34/26	-53/10
Matrix Mean	-.039	.088
|Matrix Mean|	.078	.029
Maximum Dev	-.234	.545
|Maximum Dev|	.376	.459

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	-41/34	-84/04
2	-81/58	-08/06
Matrix Mean	-.077	.242
|Matrix Mean|	.038	.071
Maximum Dev	-.185	.580
|Maximum Dev|	.233	.562

Function Coefficients

	I	II
Row 1	11/07	-124/03
2	-88/59	66/09
Matrix Mean	-.037	.151
|Matrix Mean|	.081	.157
Maximum Dev	-.162	.602
|Maximum Dev|	.264	.565

Table C49: Descriptive Statistics for 1,000 Samples from Population Matrix #4 ($\underline{v}$=12 [6+6], $\underline{n}$=3*$\underline{v}$)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	15/33	01/49	01/49	03/51	-02/52	00/52
2	16/31	00/49	02/51	-03/51	01/50	01/53
3	15/31	00/49	01/51	-01/52	02/51	00/52
4	15/31	03/49	-01/51	-01/52	01/52	-03/51
5	13/32	-01/52	00/51	02/50	00/50	01/51
6	16/32	00/51	00/52	00/51	01/51	01/49
Matrix Mean		.017	.042			
|Matrix Mean|		.486	.056			
Maximum Dev		.365	1.493			
|Maximum Dev|		1.516	.246			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	33/46	01/39	00/36	02/36	00/36	00/36
2	34/45	01/39	02/36	-02/36	01/36	00/37
3	34/44	02/38	00/38	-01/36	02/36	00/36
4	34/46	01/38	00/37	-01/37	01/37	-02/36
5	32/45	00/40	00/37	02/36	00/36	00/37
6	34/46	00/38	00/38	00/36	02/36	01/35
Matrix Mean		.041	.087			
|Matrix Mean|		.384	.075			
Maximum Dev		.424	1.117			
|Maximum Dev|		1.178	.198			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	43/37	-04/40	-03/36	-05/36	-03/35	-06/36
2	32/46	28/27	-03/36	-04/37	-06/35	-06/35
3	33/46	-04/38	27/24	-03/36	-06/37	-04/36
4	34/46	-06/38	-04/37	26/24	-04/36	-04/36
5	32/47	-05/37	-04/37	-06/35	28/24	-04/37
6	31/47	-02/37	-03/37	-05/37	-04/36	27/24
Matrix Mean		.037	.089			
|Matrix Mean|		.371	.076			
Maximum Dev		.248	1.110			
|Maximum Dev|		1.121	.191			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	29/19	-06/51	-07/51	-08/50	-05/50	-10/50
2	13/33	43/28	-07/50	-07/50	-08/50	-09/49
3	12/33	-07/49	42/27	-05/51	-11/51	-07/51
4	14/32	-10/50	-08/52	42/28	-07/51	-07/50
5	12/33	-08/48	-08/51	-10/49	42/28	-06/52
6	11/33	-04/48	-06/50	-09/52	-07/52	42/28
Matrix Mean		.014	.041			
|Matrix Mean|		.461	.059			
Maximum Dev		.183	1.430			
|Maximum Dev|		1.428	.196			

Table C50: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=8 [4+4], n=3*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	19/43	00/60	04/62	01/62
2	19/44	06/61	-01/61	-03/61
3	18/42	03/60	-01/63	00/64
4	20/44	05/59	02/61	01/63
Matrix Mean		.035	.087	
|Matrix Mean|		.588	.118	
Maximum Dev		-.052	1.592	
|Maximum Dev|		1.565	.289	

Structure Coefficients

	I	II	III	IV
Row 1	35/50	02/48	04/46	01/44
2	34/50	07/48	00/44	-03/44
3	34/50	05/46	-01/46	00/45
4	35/51	06/46	02/45	00/45
Matrix Mean		.062	.139	
|Matrix Mean|		.477	.124	
Maximum Dev		.247	1.244	
|Maximum Dev|		1.246	.234	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	47/39	-03/47	-07/45	-08/43
2	30/52	36/31	-07/43	-08/45
3	31/53	-03/46	35/29	-09/44
4	30/52	-04/48	-08/46	34/28
Matrix Mean		.046	.143	
|Matrix Mean|		.415	.132	
Maximum Dev		.020	1.141	
|Maximum Dev|		1.103	.292	

Function Coefficients

	I	II	III	IV
Row 1	41/26	-11/60	-14/59	-14/61
2	13/46	51/32	-14/58	-14/62
3	14/46	-10/59	53/32	-16/60
4	13/45	-13/60	-14/62	51/32
Matrix Mean		.021	.085	
|Matrix Mean|		.486	.119	
Maximum Dev		-.223	1.345	
|Maximum Dev|		1.326	.317	

Table C51: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=6 [4+2], n=3*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	21/47	04/58
2	19/46	04/63
3	21/49	04/61
4	20/48	02/64
Matrix Mean	.074	.134
|Matrix Mean|	.526	.158
Maximum Dev	.332	1.301
|Maximum Dev|	1.282	.398

Structure Coefficients

	I	II
Row 1	35/47	04/46
2	35/45	06/49
3	37/46	05/47
4	35/47	05/49
Matrix Mean	.127	.217
|Matrix Mean|	.460	.193
Maximum Dev	.393	1.051
|Maximum Dev|	1.074	.323

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	66/36	-35/57
2	37/66	56/35
Matrix Mean	.086	.287
|Matrix Mean|	.345	.315
Maximum Dev	.295	.789
|Maximum Dev|	.637	.551

Function Coefficients

	I	II
Row 1	62/32	-55/61
2	22/67	74/32
Matrix Mean	.055	.225
|Matrix Mean|	.317	.281
Maximum Dev	.132	.850
|Maximum Dev|	.659	.552

Table C52: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [10+2], n=3*v)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	13/30	00/42	
2	11/28	-03/42	
3	12/28	02/41	
4	13/28	-02/40	
5	12/29	-01/41	
6	12/28	02/42	
7	12/29	02/42	
8	12/28	04/42	
9	11/29	00/42	
10	11/29	01/42	
Matrix Mean		.027	.044
|Matrix Mean|		.331	.055
Maximum Dev		.222	1.077
|Maximum Dev|		1.067	.264

Structure Coefficients

	I	II	
Row 1	39/28	02/30	
2	38/28	-01/32	
3	38/27	03/32	
4	39/29	01/30	
5	39/28	00/32	
6	38/28	02/31	
7	38/28	02/32	
8	38/28	03/32	
9	38/28	01/31	
10	38/28	02/31	
Matrix Mean		.086	.129
|Matrix Mean|		.287	.106
Maximum Dev		.247	.818
|Maximum Dev|		.829	.209

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	72/27	-49/41	
2	60/48	57/28	
Matrix Mean		.046	.207
|Matrix Mean|		.222	.236
Maximum Dev		.153	.557
|Maximum Dev|		.401	.415

Function Coefficients

	I	II	
Row 1	61/27	-70/42	
2	45/50	77/26	
Matrix Mean		.032	.165
|Matrix Mean|		.206	.215
Maximum Dev		.156	.560
|Maximum Dev|		.411	.411

Table C53: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [6+6], n=10*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	26/13	-02/48	01/48	-02/48	00/47	02/47
2	26/12	01/47	-02/48	01/49	00/49	00/48
3	26/13	-01/47	00/49	00/47	-01/49	-01/48
4	25/12	00/47	02/47	-01/48	00/49	01/50
5	25/13	01/48	00/50	00/49	00/48	-02/47
6	26/13	02/50	-01/47	01/48	00/47	00/47
Matrix Mean		.003	.016			
|Matrix Mean|		.448	.048			
Maximum Dev		.349	1.447			
|Maximum Dev|		1.471	.220			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	58/17	-02/36	01/36	-02/36	00/35	01/35
2	59/16	00/35	-01/36	00/36	01/36	00/35
3	58/17	00/35	00/36	00/35	-01/36	-01/36
4	58/16	00/35	01/35	00/35	-01/36	00/37
5	58/16	00/35	00/36	00/36	-01/36	-01/35
6	58/17	01/38	00/35	00/35	00/35	00/35
Matrix Mean		.006	.033			
|Matrix Mean|		.337	.041			
Maximum Dev		.269	1.079			
|Maximum Dev|		1.099	.166			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	58/14	-06/35	-05/36	-06/36	-07/34	-04/35
2	58/17	28/21	-04/35	-04/36	-05/35	-07/35
3	58/17	-06/34	28/20	-07/35	-04/37	-05/36
4	58/17	-04/36	-06/35	27/21	-06/35	-06/34
5	58/17	-06/35	-04/35	-04/35	29/20	-06/35
6	58/17	-05/36	-05/36	-04/35	-05/34	28/20
Matrix Mean		.003	.032			
|Matrix Mean|		.321	.045			
Maximum Dev		.140	1.045			
|Maximum Dev|		1.044	.142			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	26/11	-08/47	-07/48	-09/48	-10/46	-05/49
2	26/13	39/27	-06/48	-07/49	-07/47	-10/48
3	25/13	-08/46	39/26	-10/47	-07/50	-07/49
4	26/13	-06/50	-09/48	38/26	-08/48	-08/46
5	26/13	-09/47	-06/48	-06/48	40/26	-08/48
6	26/13	-07/49	08/48	-06/48	-08/46	39/26
Matrix Mean		.000	.016			
|Matrix Mean|		.427	.053			
Maximum Dev		.202	1.391			
|Maximum Dev|		1.393	.182			

Table C54: Descriptive Statistics for 1,000 Samples from Population Matrix #4 ($\underline{v}$=8 [4+4], $\underline{n}$=10*$\underline{v}$)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	34/21	-01/57	00/59	00/59
2	36/20	01/58	01/57	05/60
3	33/21	-01/59	-02/60	-03/57
4	33/21	00/60	02/58	-01/58
Matrix Mean		.007	.046	
|Matrix Mean|		.527	.107	
Maximum Dev		.001	1.529	
|Maximum Dev|		1.502	.284	

Structure Coefficients

	I	II	III	IV
Row 1	59/25	-01/43	00/45	00/45
2	61/25	01/44	01/42	04/44
3	59/25	-01/45	-01/45	-02/43
4	59/26	01/45	02/44	-01/43
Matrix Mean		.013	.075	
|Matrix Mean|		.404	.092	
Maximum Dev		.036	1.164	
|Maximum Dev|		1.144	.215	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	60/20	-14/42	-11/44	-14/42
2	59/26	37/25	-10/42	-12/42
3	60/27	-10/42	37/24	-11/42
4	60/26	-11/42	-13/42	36/24
Matrix Mean		.009	.075	
|Matrix Mean|		.329	.098	
Maximum Dev		-.192	.958	
|Maximum Dev|		.940	.266	

Function Coefficients

	I	II	III	IV
Row 1	35/16	-20/55	-16/58	-19/56
2	33/22	53/30	-15/55	-17/57
3	34/23	-15/56	51/30	-14/57
4	35/22	-16/56	-18/56	51/29
Matrix Mean		.003	.044	
|Matrix Mean|		.423	.113	
Maximum Dev		-.198	1.244	
|Maximum Dev|		1.215	.330	

Table C55: Descriptive Statistics for 1,000 Samples from Population Matrix #4 ($\underline{v}$=6 [4+2], $\underline{n}$=10*$\underline{v}$)

Larger Variable Set
Function Coefficients

	I	II
Row 1	33/25	01/58
2	32/25	-04/59
3	33/28	01/58
4	35/25	-01/57
Matrix Mean	.028	.075
|Matrix Mean|	.415	.130
Maximum Dev	.300	1.245
|Maximum Dev|	1.196	.458

Structure Coefficients

	I	II
Row 1	57/26	00/46
2	58/25	-04/45
3	58/27	00/45
4	59/25	-01/44
Matrix Mean	.050	.127
|Matrix Mean|	.332	.126
Maximum Dev	.303	.967
|Maximum Dev|	.947	.358

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	74/21	-58/26
2	71/32	58/23
Matrix Mean	.031	.160
|Matrix Mean|	.147	.164
Maximum Dev	.097	.368
|Maximum Dev|	.257	.281

Function Coefficients

	I	II
Row 1	60/22	-78/25
2	57/34	78/20
Matrix Mean	.022	.128
|Matrix Mean|	.138	.147
Maximum Dev	.124	.359
|Maximum Dev|	.264	.274

Table C56: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [10+2], n=10*v)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	17/14	01/38	
2	17/14	00/36	
3	16/15	00/37	
4	17/14	-02/38	
5	16/15	-02/39	
6	16/14	01/38	
7	15/15	00/38	
8	15/15	02/38	
9	16/15	-01/37	
10	16/14	00/38	
Matrix Mean	.008		.015
|Matrix Mean|	.268		.044
Maximum Dev	.282		1.009
|Maximum Dev|	1.018		.243

Structure Coefficients

	I	II	
Row 1	52/13	01/28	
2	54/12	00/27	
3	53/12	01/28	
4	54/12	-01/28	
5	52/13	-02/29	
6	52/12	01/28	
7	52/13	00/28	
8	52/13	01/29	
9	53/12	-01/28	
10	53/12	-01/28	
Matrix Mean	.023		.046
|Matrix Mean|	.207		.035
Maximum Dev	.189		.761
|Maximum Dev|	.763		.182

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	78/11	-61/13	
2	78/11	59/13	
Matrix Mean	.007		.067
|Matrix Mean|	.077		.062
Maximum Dev	.025		.159
|Maximum Dev|	.133		.091

Function Coefficients

	I	II	
Row 1	62/14	-82/12	
2	63/14	81/12	
Matrix Mean	.006		.054
|Matrix Mean|	.075		.061
Maximum Dev	.069		.152
|Maximum Dev|	.138		.094

Table C57: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [6+6], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	27/06	00/47	02/48	01/47	00/48	02/47
2	28/06	-01/49	00/46	00/47	-03/47	-01/47
3	27/06	00/47	00/48	02/48	01/47	02/47
4	26/06	-02/46	00/48	-01/49	02/47	-01/49
5	27/06	02/48	-01/47	-01/47	-01/48	00/47
6	27/06	00/48	-01/48	-02/47	01/47	-01/47
Matrix Mean		.000	.008			
|Matrix Mean|		.437	.048			
Maximum Dev		.508	1.399			
|Maximum Dev|		1.470	.229			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	60/06	00/35	02/36	01/35	00/36	02/36
2	61/06	00/36	00/34	00/35	-02/35	-01/35
3	60/06	00/36	00/36	01/36	01/35	01/35
4	60/06	-01/34	00/35	-01/36	02/35	-01/36
5	61/06	02/36	00/35	-01/35	-01/36	00/35
6	60/06	00/36	00/36	-02/35	01/35	-01/36
Matrix Mean		.001	.014			
|Matrix Mean|		.329	.036			
Maximum Dev		.353	1.053			
|Maximum Dev|		1.097	.171			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	61/06	-03/36	-03/35	-05/34	-06/35	-04/35
2	61/06	29/20	-05/36	-07/35	-06/34	-06/35
3	60/06	-05/35	29/19	-06/35	-07/36	-04/35
4	61/06	-06/36	-06/34	29/19	-07/34	-06/35
5	61/06	-07/33	-07/34	-06/36	29/19	-07/36
6	61/06	-07/35	-06/36	-05/35	-03/35	28/20
Matrix Mean		.000	.014			
|Matrix Mean|		.311	.039			
Maximum Dev		.225	1.001			
|Maximum Dev|		1.018	.129			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	27/06	-04/48	-04/47	-07/47	-08/47	-06/48
2	27/07	40/26	-07/48	-09/47	-07/46	-08/47
3	26/07	-07/47	39/25	-08/47	-09/49	-06/47
4	27/07	-09/48	-09/46	40/25	-09/47	-08/47
5	27/07	-10/45	-09/46	-09/48	39/26	-10/48
6	27/07	-09/47	-08/48	-07/47	-05/47	39/26
Matrix Mean		.000	.007			
|Matrix Mean|		.417	.052			
Maximum Dev		.325	1.336			
|Maximum Dev|		1.364	.171			

Table C58: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=8 [4+4], n=25*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	37/10	01/58	-01/59	-02/57
2	38/10	-02/59	02/57	-01/58
3	37/10	01/57	-03/58	02/59
4	37/10	01/59	02/58	01/58
Matrix Mean		-.001	.019	
|Matrix Mean|		.514	.101	
Maximum Dev		.022	1.534	
|Maximum Dev|		1.505	.292	

Structure Coefficients

	I	II	III	IV
Row 1	64/09	01/44	-01/45	-02/44
2	65/09	-01/44	01/43	00/43
3	65/08	02/43	-02/44	02/44
4	65/09	01/44	02/43	01/43
Matrix Mean		-.001	.029	
|Matrix Mean|		.388	.077	
Maximum Dev		.004	1.153	
|Maximum Dev|		1.132	.217	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	65/08	-13/43	-12/42	-14/40
2	66/08	36/22	-15/42	-11/41
3	65/08	-09/41	37/23	-13/43
4	65/08	-13/42	-09/41	38/22
Matrix Mean		-.002	.029	
|Matrix Mean|		.309	.082	
Maximum Dev		-.156	.919	
|Maximum Dev|		.902	.234	

Function Coefficients

	I	II	III	IV
Row 1	36/10	-18/58	-17/56	-19/54
2	38/10	49/29	-20/57	-14/55
3	37/10	-12/55	50/30	-18/57
4	37/10	-18/57	-13/54	51/29
Matrix Mean		-.002	.018	
|Matrix Mean|		.412	.110	
Maximum Dev		-.139	1.233	
|Maximum Dev|		1.200	.314	

Table C59: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=6 [4+2], n=25*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	38/15	-01/58
2	37/15	02/58
3	36/15	01/58
4	36/15	-02/58
Matrix Mean	.009	.032
|Matrix Mean|	.387	.120
Maximum Dev	.291	1.254
|Maximum Dev|	1.197	.474

Structure Coefficients

	I	II
Row 1	64/12	-01/44
2	64/12	01/44
3	64/12	00/44
4	64/12	-02/44
Matrix Mean	.015	.052
|Matrix Mean|	.296	.090
Maximum Dev	.267	.947
|Maximum Dev|	.917	.356

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	78/10	-60/13
2	78/10	60/13
Matrix Mean	.004	.063
|Matrix Mean|	.074	.056
Maximum Dev	.008	.151
|Maximum Dev|	.127	.082

Function Coefficients

	I	II
Row 1	62/13	-81/11
2	62/13	81/11
Matrix Mean	.003	.051
|Matrix Mean|	.071	.055
Maximum Dev	.065	.141
|Maximum Dev|	.131	.084

Table C60: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [10+2], n=25*v)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	18/09	00/37	
2	17/09	-01/37	
3	17/09	00/37	
4	17/09	-01/37	
5	16/09	-03/37	
6	18/09	-01/36	
7	16/09	00/38	
8	16/09	03/37	
9	18/10	03/38	
10	16/09	00/36	
Matrix Mean		.003	.009
|Matrix Mean|		.244	.040
Maximum Dev		.294	.996
|Maximum Dev|		1.011	.237

Structure Coefficients

	I	II	
Row 1	55/08	00/28	
2	56/07	-01/27	
3	56/07	00/28	
4	56/07	-01/28	
5	55/08	-02/28	
6	56/07	00/27	
7	55/08	00/28	
8	55/08	02/28	
9	56/08	02/28	
10	56/08	00/27	
Matrix Mean		.009	.026
|Matrix Mean|		.187	.031
Maximum Dev		.205	.748
|Maximum Dev|		.755	.176

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	79/06	-61/08	
2	79/06	61/08	
Matrix Mean		.002	.037
|Matrix Mean|		.043	.033
Maximum Dev		.002	.089
|Maximum Dev|		.076	.047

Function Coefficients

	I	II	
Row 1	63/08	-82/07	
2	63/08	81/06	
Matrix Mean		.001	.030
|Matrix Mean|		.042	.033
Maximum Dev		.029	.086
|Maximum Dev|		.077	.048

Table C61: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [6+6], n=40*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV	V	VI
Row 1	27/05	01/46	02/48	00/48	00/48	-01/47
2	28/05	03/46	00/48	01/47	-01/47	-02/48
3	27/05	00/47	-03/47	-02/49	04/48	01/45
4	27/05	-06/47	02/47	01/47	00/47	02/48
5	26/05	02/48	-01/47	-02/48	-02/48	-01/47
6	27/05	00/49	00/46	00/46	-01/47	01/48
Matrix Mean		.000	.006			
|Matrix Mean|		.434	.048			
Maximum Dev		.308	1.431			
|Maximum Dev|		1.446	.224			

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	60/05	01/35	01/36	00/36	00/36	-01/35
2	62/04	03/34	00/36	01/35	00/35	-01/36
3	61/04	00/35	-02/35	-01/36	03/36	01/34
4	61/04	-04/35	01/35	01/35	00/35	01/36
5	61/05	02/36	-01/35	-01/35	-01/36	-01/35
6	61/05	00/37	00/34	00/34	00/35	01/36
Matrix Mean		.000	.012			
|Matrix Mean|		.326	.036			
Maximum Dev		.220	1.072			
|Maximum Dev|		1.082	.167			

Smaller Variable Set

Structure Coefficients

	I	II	III	IV	V	VI
Row 1	61/05	-06/37	-06/34	-06/35	-05/33	-07/34
2	61/05	29/20	-07/35	-06/34	-04/35	-05/35
3	60/05	-07/34	30/19	-07/34	-06/36	-08/35
4	62/05	-04/34	-03/35	31/20	-06/34	-04/35
5	61/05	-06/34	-06/34	-05/36	30/20	-05/34
6	61/05	-06/35	-06/34	-06/33	-07/35	31/19
Matrix Mean		-.001	.011			
|Matrix Mean|		.308	.041			
Maximum Dev		.198	1.000			
|Maximum Dev|		1.010	.134			

Function Coefficients

	I	II	III	IV	V	VI
Row 1	27/05	-08/49	-08/46	-08/47	-07/45	-09/46
2	27/05	40/26	-10/48	-09/46	-06/47	-07/47
3	26/05	-10/45	41/25	-10/46	-08/48	-11/47
4	27/05	-05/46	-04/47	42/26	-09/46	-06/47
5	27/05	-09/46	-09/46	-08/48	41/26	-07/46
6	27/05	-08/47	-09/46	-08/45	-10/47	41/26
Matrix Mean		-.001	.006			
|Matrix Mean|		.413	.055			
Maximum Dev		.313	1.331			
|Maximum Dev|		1.355	.178			

Table C62: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=8 [4+4], n=40*v)

Larger Variable Set

Function Coefficients

	I	II	III	IV
Row 1	37/08	-03/58	01/59	-01/56
2	38/08	02/59	00/57	-02/58
3	37/08	-01/58	02/58	00/58
4	37/08	02/57	-02/58	02/59
Matrix Mean		-.001	.014	
|Matrix Mean|		.506	.103	
Maximum Dev		-.149	1.524	
|Maximum Dev|		1.502	.295	

Structure Coefficients

	I	II	III	IV
Row 1	65/07	-02/44	01/44	-01/43
2	66/06	01/44	00/42	-01/43
3	66/06	00/43	01/44	00/43
4	66/06	01/42	-02/43	01/44
Matrix Mean		-.001	.023	
|Matrix Mean|		.381	.076	
Maximum Dev		-.090	1.144	
|Maximum Dev|		1.126	.220	

Smaller Variable Set

Structure Coefficients

	I	II	III	IV
Row 1	65/07	-15/41	-11/42	-13/42
2	66/08	37/22	-13/42	-13/41
3	66/07	-09/40	38/22	-11/43
4	66/07	-12/43	-13/41	36/22
Matrix Mean		-.002	.024	
|Matrix Mean|		.307	.083	
Maximum Dev		-.149	.916	
|Maximum Dev|		.896	.240	

Function Coefficients

	I	II	III	IV
Row 1	36/08	-21/55	-15/55	-17/56
2	38/08	50/30	-18/56	-17/54
3	37/08	-13/54	51/29	-15/57
4	38/08	-16/57	-18/54	50/28
Matrix Mean		-.002	.015	
|Matrix Mean|		.409	.111	
Maximum Dev		-.150	1.229	
|Maximum Dev|		1.195	.322	

Table C63: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=6 [4+2], n=40*v)

Larger Variable Set
Function Coefficients

	I	II
Row 1	38/12	02/58
2	37/11	-02/58
3	37/11	-01/58
4	37/11	02/57
Matrix Mean	.005	.023
|Matrix Mean|	.370	.117
Maximum Dev	.266	1.234
|Maximum Dev|	1.171	.470

Structure Coefficients

	I	II
Row 1	65/10	01/44
2	65/09	-02/44
3	65/09	00/44
4	65/09	01/43
Matrix Mean	.007	.039
|Matrix Mean|	.282	.088
Maximum Dev	.222	.934
|Maximum Dev|	.891	.356

Smaller Variable Set
Structure Coefficients

	I	II
Row 1	79/07	-60/09
2	79/08	60/10
Matrix Mean	.002	.047
|Matrix Mean|	.054	.042
Maximum Dev	.003	.111
|Maximum Dev|	.094	.059

Function Coefficients

	I	II
Row 1	63/10	-82/08
2	63/10	82/08
Matrix Mean	.001	.038
|Matrix Mean|	.052	.042
Maximum Dev	.046	.104
|Maximum Dev|	.096	.060

Table C64: Descriptive Statistics for 1,000 Samples from Population Matrix #4 (v=12 [10+2], n=40*v)

Larger Variable Set
Function Coefficients

	I	II	
Row 1	17/07	01/36	
2	17/07	00/37	
3	18/07	00/38	
4	18/07	-01/36	
5	17/07	-01/37	
6	18/07	02/37	
7	16/07	01/36	
8	16/07	-01/36	
9	17/07	00/37	
10	17/07	-01/38	
Matrix Mean		.002	.007
|Matrix Mean|		.234	.040
Maximum Dev		.273	.984
|Maximum Dev|		.991	.243

Structure Coefficients

	I	II	
Row 1	55/06	01/27	
2	56/06	00/28	
3	56/06	00/28	
4	56/06	-01/27	
5	56/06	-01/28	
6	56/06	02/28	
7	56/06	00/26	
8	55/06	-01/27	
9	56/06	00/28	
10	56/06	-01/28	
Matrix Mean		.006	.020
|Matrix Mean|		.178	.030
Maximum Dev		.209	.733
|Maximum Dev|		.740	.181

Smaller Variable Set
Structure Coefficients

	I	II	
Row 1	79/04	-61/06	
2	79/04	61/06	
Matrix Mean		.000	.028
|Matrix Mean|		.031	.024
Maximum Dev		-.002	.066
|Maximum Dev|		.057	.034

Function Coefficients

	I	II	
Row 1	63/06	-82/05	
2	63/06	82/05	
Matrix Mean		.000	.022
|Matrix Mean|		.031	.025
Maximum Dev		.017	.064
|Maximum Dev|		.057	.034

APPENDIX D:
Results for Function I Only

Table D1
Mean Deviations from Population Values on Function I

			Larger v Set		Smaller v Set	
Matrix	v	n	Function I	Structure I	Structure I	Function I
1	12	36	-.159(0.184)	-.161(0.166)	.051(0.160)	.040(0.175)
		120	.387(0.269)	.385(0.251)	-.193(0.225)	-.206(0.237)
		300	-.821(0.577)	-.806(0.512)	.288(0.389)	.271(0.394)
		480	-.054(0.584)	-.051(0.485)	-.633(0.388)	-.639(0.389)
	8	24	-.167(0.170)	-.167(0.163)	.041(0.155)	.038(0.159)
		80	.379(0.252)	.380(0.246)	-.193(0.226)	-.200(0.231)
		200	-.811(0.525)	-.811(0.507)	.289(0.375)	.282(0.379)
		320	-.036(0.527)	-.027(0.507)	-.626(0.393)	-.628(0.391)
	6	18	-.161(0.167)	-.161(0.165)	.049(0.156)	.047(0.158)
		60	.382(0.258)	.382(0.255)	-.200(0.220)	-.202(0.221)
		150	-.849(0.506)	-.848(0.503)	.284(0.394)	.283(0.391)
		240	-.048(0.506)	-.046(0.497)	-.624(0.395)	-.622(0.394)
	12	36	-.153(0.164)	-.153(0.162)	.048(0.155)	.048(0.155)
		120	.386(0.247)	.385(0.246)	-.213(0.224)	-.214(0.226)
		300	-.811(0.513)	-.812(0.508)	.271(0.370)	.275(0.370)
		480	-.044(0.508)	-.044(0.502)	-.625(0.390)	-.625(0.389)
2	12	36	-.222(0.234)	-.226(0.236)	-.236(0.240)	-.235(0.231)
		120	-.353(0.353)	-.358(0.354)	-.375(0.359)	-.377(0.348)
		300	.015(0.153)	.026(0.215)	.023(0.104)	.001(0.108)
		480	.016(0.146)	.015(0.269)	.004(0.060)	.004(0.058)
	8	24	-.225(0.236)	-.228(0.237)	-.231(0.239)	-.230(0.234)
		80	-.365(0.355)	-.366(0.354)	-.378(0.359)	-.372(0.353)
		200	.004(0.067)	.013(0.108)	.004(0.046)	.000(0.046)
		320	.004(0.067)	-.001(0.152)	.002(0.032)	.000(0.031)
	6	18	-.236(0.236)	-.236(0.237)	-.241(0.238)	-.238(0.235)
		60	-.353(0.354)	-.354(0.352)	-.360(0.356)	-.358(0.352)
		150	-.001(0.041)	.001(0.067)	.001(0.029)	.000(0.028)
		240	.001(0.041)	.001(0.096)	.000(0.020)	.001(0.020)
	12	36	-.233(0.236)	-.234(0.238)	-.237(0.238)	-.235(0.235)
		120	-.362(0.353)	-.361(0.353)	-.367(0.357)	-.365(0.352)
		300	.001(0.032)	.000(0.054)	.000(0.022)	.001(0.022)
		480	.001(0.031)	-.002(0.073)	.000(0.015)	.000(0.015)
3	12	36	.122(0.155)	.261(0.302)	.260(0.297)	.111(0.146)
		120	.159(0.204)	.322(0.382)	.312(0.386)	.129(0.199)
		300	-.349(0.418)	-.693(0.774)	-.638(0.672)	-.399(0.419)
		480	-.554(0.526)	-1.280(1.211)	-.705(0.727)	-.441(0.454)
	8	24	.090(0.142)	.188(0.295)	.191(0.298)	.085(0.142)
		80	.140(0.192)	.283(0.380)	.275(0.388)	.127(0.189)
		200	-.168(0.327)	-.340(0.642)	-.275(0.552)	-.171(0.343)
		320	-.387(0.529)	-.913(1.243)	-.489(0.705)	-.306(0.441)
	6	18	.062(0.124)	.133(0.259)	.135(0.262)	.062(0.125)
		60	.107(0.178)	.215(0.352)	.211(0.358)	.100(0.177)
		150	-.065(0.218)	-.132(0.426)	-.102(0.357)	-.063(0.223)
		240	-.234(0.465)	-.549(1.096)	-.298(0.608)	-.186(0.379)
	12	36	.044(0.111)	.094(0.230)	.094(0.233)	.044(0.110)
		120	.091(0.170)	.183(0.338)	.181(0.344)	.086(0.169)

		300	-.020(0.135)	-.042(0.262)	-.031(0.215)	-.020(0.133)
		480	-.121(0.350)	-.286(0.822)	-.151(0.455)	-.094(0.284)
4	12	36	.121(0.185)	.277(0.410)	.273(0.406)	.118(0.181)
		120	.186(0.245)	.317(0.424)	.318(0.423)	.175(0.237)
		300	.356(0.422)	.607(0.701)	.279(0.438)	.209(0.347)
		480	.287(0.310)	.940(1.000)	.134(0.310)	.101(0.246)
	8	24	.014(0.062)	.031(0.138)	.032(0.136)	.014(0.060)
		80	.037(0.124)	.065(0.214)	.066(0.211)	.034(0.119)
		200	.090(0.212)	.165(0.366)	.062(0.207)	.045(0.164)
		320	.069(0.053)	.224(0.192)	.011(0.034)	.008(0.024)
	6	18	.002(0.008)	.007(0.018)	.006(0.018)	.002(0.008)
		60	.005(0.014)	.010(0.026)	.010(0.023)	.005(0.012)
		150	.024(0.037)	.046(0.066)	.010(0.028)	.007(0.022)
		240	.025(0.028)	.089(0.092)	.004(0.017)	.002(0.014)
	12	36	.001(0.006)	.004(0.014)	.003(0.013)	.002(0.006)
		120	.004(0.010)	.005(0.018)	.007(0.018)	.003(0.010)
		300	.014(0.026)	.023(0.046)	.005(0.021)	.004(0.016)
		480	.016(0.020)	.053(0.071)	.002(0.013)	.001(0.010)

Note. SD's are presented in parentheses.

Table D2
Mean Absolute Deviations from Population Values on Function I

			Larger v Set		Smaller v Set	
Matrix	v	n	Function I	Structure I	Structure I	Function I
1	12	36	.474(0.104)	.455(0.098)	.422(0.112)	.437(0.112)
		120	.609(0.191)	.589(0.179)	.563(0.182)	.580(0.185)
		300	1.220(0.408)	1.150(0.382)	.726(0.379)	.730(0.386)
		480	1.925(0.353)	1.726(0.286)	.673(0.363)	.673(0.365)
	8	24	.465(0.094)	.456(0.091)	.423(0.105)	.425(0.107)
		80	.580(0.182)	.573(0.179)	.559(0.178)	.567(0.181)
		200	1.159(0.374)	1.139(0.372)	.732(0.372)	.735(0.379)
		320	1.798(0.298)	1.752(0.286)	.663(0.371)	.663(0.372)
	6	18	.455(0.093)	.452(0.091)	.414(0.110)	.415(0.111)
		60	.578(0.183)	.574(0.181)	.567(0.177)	.567(0.177)
		150	1.182(0.369)	1.175(0.367)	.716(0.373)	.719(0.376)
		240	1.750(0.279)	1.735(0.274)	.661(0.370)	.660(0.368)
	12	36	.447(0.097)	.445(0.097)	.417(0.109)	.418(0.109)
		120	.583(0.175)	.581(0.174)	.570(0.172)	.571(0.172)
		300	1.157(0.382)	1.153(0.380)	.730(0.373)	.730(0.375)
		480	1.753(0.274)	1.743(0.273)	.661(0.367)	.661(0.367)
2	12	36	.290(0.218)	.336(0.220)	.336(0.221)	.288(0.218)
		120	.427(0.325)	.466(0.324)	.469(0.326)	.425(0.323)
		300	.247(0.128)	.341(0.143)	.136(0.098)	.137(0.095)
		480	.398(0.124)	.659(0.156)	.087(0.054)	.087(0.052)
	8	24	.256(0.228)	.286(0.227)	.286(0.229)	.255(0.226)
		80	.399(0.341)	.423(0.339)	.428(0.342)	.396(0.337)
		200	.119(0.050)	.181(0.071)	.066(0.040)	.067(0.040)
		320	.188(0.048)	.364(0.089)	.045(0.026)	.045(0.026)
	6	18	.254(0.231)	.274(0.231)	.274(0.232)	.253(0.230)
		60	.375(0.345)	.392(0.345)	.393(0.346)	.374(0.343)
		150	.073(0.030)	.113(0.046)	.040(0.024)	.040(0.023)
		240	.116(0.030)	.227(0.055)	.028(0.016)	.028(0.016)
	12	36	.247(0.232)	.262(0.232)	.263(0.234)	.246(0.231)
		120	.378(0.347)	.391(0.347)	.393(0.348)	.376(0.345)
		300	.057(0.022)	.089(0.034)	.032(0.018)	.032(0.018)
		480	.089(0.022)	.176(0.042)	.022(0.012)	.022(0.012)
3	12	36	.402(0.199)	.396(0.216)	.397(0.209)	.401(0.200)
		120	.522(0.301)	.479(0.285)	.480(0.295)	.511(0.290)
		300	.854(0.504)	.929(0.625)	.668(0.643)	.490(0.404)
		480	1.332(0.622)	1.647(0.946)	.716(0.716)	.506(0.420)
	8	24	.258(0.221)	.270(0.238)	.272(0.242)	.250(0.213)
		80	.381(0.334)	.364(0.322)	.365(0.323)	.368(0.323)
		200	.458(0.448)	.508(0.554)	.319(0.528)	.266(0.361)
		320	.864(0.675)	1.174(1.063)	.504(0.695)	.359(0.431)
	6	18	.169(0.205)	.185(0.230)	.185(0.234)	.163(0.200)
		60	.273(0.323)	.268(0.317)	.268(0.321)	.260(0.310)
		150	.241(0.308)	.260(0.380)	.144(0.342)	.139(0.253)
		240	.563(0.621)	.771(0.983)	.315(0.599)	.231(0.387)
	12	36	.126(0.184)	.141(0.209)	.140(0.212)	.123(0.179)
		120	.231(0.315)	.229(0.310)	.231(0.314)	.225(0.303)
		300	.158(0.192)	.161(0.229)	.076(0.203)	.085(0.156)
		480	.362(0.480)	.479(0.753)	.168(0.449)	.133(0.294)
4	12	36	.258(0.145)	.347(0.374)	.341(0.371)	.251(0.142)
		120	.359(0.201)	.405(0.379)	.401(0.380)	.349(0.197)

	300	.794(0.374)	.785(0.614)	.389(0.397)	.412(0.320)
	480	1.154(0.346)	1.203(0.900)	.245(0.293)	.282(0.251)
8	24	.094(0.059)	.092(0.130)	.094(0.128)	.096(0.058)
	80	.152(0.118)	.146(0.202)	.144(0.198)	.150(0.112)
	200	.395(0.227)	.351(0.343)	.162(0.205)	.196(0.183)
	320	.590(0.155)	.513(0.151)	.082(0.061)	.107(0.081)
6	18	.052(0.017)	.048(0.015)	.048(0.016)	.054(0.018)
	60	.081(0.037)	.068(0.029)	.065(0.028)	.080(0.034)
	150	.240(0.106)	.191(0.085)	.079(0.055)	.104(0.076)
	240	.362(0.091)	.310(0.080)	.047(0.033)	.062(0.045)
12	36	.040(0.014)	.037(0.012)	.038(0.012)	.042(0.014)
	120	.064(0.026)	.053(0.021)	.054(0.022)	.064(0.028)
	300	.178(0.076)	.143(0.061)	.059(0.041)	.078(0.056)
	480	.282(0.072)	.242(0.060)	.035(0.023)	.045(0.033)

Note. SD's are presented in parentheses.